

The following notes are the results of studies preliminary to my treatment of this family for the various local "floras", to which I am a contributor, and of my attempts to name my own collections and specimens sent to me for identification.

1. *Alternanthera littoralis* P. Beauv.

Fl. d'Oware et de Benin 2 : 72 (1819, "1807")<sup>1</sup>.

— *Alternanthera maritima* var. *africana* HAUMAN, Bull. Jard. Bot. de l'Etat 18 : 115 (1946).

That PALISOT DE BEAUVOIS published his species with a full description and an excellent plate was evidently unknown to MOQUIN-TANDON, who (1849) refers to it as an unpublished "herbarium name", which he places in the synonymy of *Telanthera maritima* (Mart.) Moq. Probably for this reason, PALISOT DE BEAUVOIS's published name escaped the notice of the compilers of the Index Kewensis and seems to have been completely forgotten, the later name *Bucholzia maritima* Mart., or combinations based thereon, being used instead.

MARTIUS described his species from an American plant. The African and the American plants are not identical, but it is generally accepted that they can not be separated at specific level. As may be expected with a species of such vast geographic range, considerable variation is to be found. In all, within this complex four varieties can be discerned, which may be separated by the following key :

- A. Perianth hairy..... a. var. *littoralis*
- A'. Perianth glabrous or almost so.
  - B. Leaves persistently hairy ..... d. var. *sparmannii*
  - B'. Leaves glabrous, or only hairy when young.
    - C. Spikes few-flowered (< 10 flowers); bracts and flowers divergent from the axis; tepals relatively short and broad, with a narrow scarious margin ..... c. var. *maritima*
    - C'. Flowers more numerous (10-20, or more in a spike); bracts and flowers appressed to the axis; tepals longer and narrower, with a broad scarious margin ..... b. var. *guineensis*

1a. *A. littoralis* var. *littoralis*

Synonyms as above. To save space, I shall refrain from giving detailed descriptions of the taxa here recognized, except when absolutely necessary, as the species with the previously published varieties are found described in numerous floristic works.

MATERIAL SEEN. — OWARE(?) : *Palisot de Beauvois s.n.*, type (G : the tepals, especially the two abaxial, are clearly hairy, though not so densely as may be seen in other specimens); a specimen in G-DC, labelled "*Alternanthera littoralis* B! h. DC. 74 Oware M. Delessert 1821 Herb. Beauv." and referred by

1. According to STAFLEU & COWAN, Taxonomic Literature, ed. 2, 4 : 18 (1983), the work was published in parts ; part 17 with page 72 became available to the public on April 20th, 1819.



MOQUIN-TANDON to *Teleianthera maritima* Moq. var. *a communis* Moq., may be a duplicate, but the tepals here appear to be glabrous. — “West Tropical Africa. Mm river 1860” : *Mann s.n.* (P). — NIGERIA : Eket Distr., *Talbot 3095* (BM, Z : doubtful — the specimen in BM looks more like var. *guineensis*, with glabrous flowers); Southern Nigeria, Nenni River, *Vogel s.n.* (K). — CAMEROONS : *Deistel 112* (M); Batanga, *Bates 37* (BM); 10 km env. N de Kribi, *Raynal 13490* (P); 5 1/2 km S of Kribi, *Bos 3149* (BR, K); entre Kribi et Lonji, *Mizili 92* (P); Chute de la Lobe, 2°53' N-9°53' E, *Bamps 1709* (BR); Entre Mouhenque (= Malimba) et Djongo (= Etalombo), *Letouzey 12618* (P). — SÃO TOME : leg. *Rattray* (K). — GABON : *Griffon de Bellay 65* (P); Mayumba, *Debeaux 104* (P); Bord de la mer au Bas Kouiloua, *Lecomte D32* (P). — ANNOBON : near Bird Island, N. coast, *Wrightley 284* (BM, K); San Antonio del Norte, *Descoings 12751* (P). — CONGO : *Chr. Smith s.n.* (BM, K); Banana, at the mouth of the Congo, *Monteiro 4/73* (K); *Becquaert 7995* (BR, type of *Alternanthera maritima* var. *africana* Haum.); mission *Schoutedy s.n.* (BM); *Vermoesen 2513* (K); Landana, Shiloango, *Becquaert 583* (BR, K); Prov. Léopoldville, territ. Boma : Vista, *Dubois 1569* (K, M); *Pauwells 5205* (BR); entre la Kumbi et la frontière de Cabinda, *Lebrun 11218* (K); Loanga, Strand bei Chinchono, *Soyaux 31* (M); Moanda, *Donis 2238* (BM, K); Pointe Noire, *Makany 31* (P); *Koechlin 5475* (P). — ANGOLA : distr. Ambriz, *Welwitsch 6553* (BM); Distr. Loanda : in maritimis de Ilha Caranza, *Welwitsch 6535* (BM, BR, G, M); Praia de S. Thiago, *Welwitsch 6559* (B); Foz do Cuvo, 10°52' S-13°50' E, *Bamps & Martins 4346* (BR); Chilungo, *Gossweiler 8265* (BM, K).

1b. *A. littoralis* var. *guineensis* Pedersen, var. nov.

*A varietate littorali recedit bracteis, bracteolis tepalisque glaberrimis. A varietate sparmannii recedit foliis glabris vel junioribus parce pilosis. A varietate maritima recedit floribus in spicis numerosioribus — 10-20 — appressis, tepalis vulgo longioribus, pro rata angustioribus.*

TYPUS : *Bamps 1826*, Ivory Coast, Port Bouet; plage sableuse; herbe couchée, traçante; feuilles crassulescentes; fleurs blanches en glomérules écailléux; 11.1.1969 (holo-, BR).

FURTHER MATERIAL SEEN. — SIERRA LEONE : *Afzelius s.n.* (BM); *Don s.n.* (B); *Hepper 2534* (K); *Lumley, Melville & Hooper 163* (K); *Lungi, Thomas 7299* (K); *Mano Salija, Deighton 276* (K); No. 2 River Beach Colony, *Small 159* (K); Yele Distr., Turtle Islands, *Deighton 2344* (K). — LIBERIA : Bassa, *Vogel s.n.* (K); Elwa Beach, east side of Monrovia, *Bos 2011* (BR, K). — IVORY COAST : *Azuretti, Roberty 15009* (G); Bassin de la Sassandra, Sassandra Port (sur la plage), *Chevalier 16343* (P); Port Bouet, 5°15' N-3°55' W, *Gerling & Bokdam 395* (BR); Monogaga, 4°58' N-6°27' W, *Gerling & Bokdam 2398* (BR); Forêt de l'Abouabou, betw. Abidjan & Gran Bassan, *Leeuwenberg 2379* (K). — DAHOMEY : Seme, *Adjanohoun 472* (P).

1c. *A. littoralis* var. *maritima* (Mart.) Pedersen, comb. nov.

- *Bucholzia maritima* MART., Nova gen. sp. pl. Bras. 2 : 50 (1826).
- *Illecebrum maritimum* (MART.) SPRENG., Curae post. : 103 (1827).
- *Alternanthera maritima* (MART.) ST.-HIL., Voy. dans le distr. des Diamans 2: 438 (1833).
- *Telanthera maritima* (MART.) MOQ., in DC., Prodr. 13 (2) : 364 (1849).
- *Achyranthes maritima* (MART.) STANDL., Journ. Wash. Acad. Sc. 5 : 74 (1915).
- *Alternanthera maritima* var. *communis* ST.-HIL., l.c. (1833).
- *Telanthera maritima* var. *a communis* (ST.-HIL.) MOQ., l.c. : 365 (1849).
- *Alternanthera maritima* var. *concatenata* ST.-HIL., l.c. (1833).
- *Telanthera maritima* var.  $\gamma$  *concatenata* (ST.-HIL.) MOQ., l.c. (1849).
- *Alternanthera maritima* var. *parvifolia* ST.-HIL., l.c. (1833), nom. illeg.  $\equiv$  var. *maritima*.
- *Telanthera maritima* var.  $\beta$  *parvifolia* (ST.-HIL.) MOQ., l.c. (1849), nom. illeg.



SELECT MATERIAL SEEN. — BRAZIL : au bord de la mer à Copacabana près Rio de Janeiro, *de Saint-Hilaire s.n.* (P, type of *Alternanthera maritima* var. *communis*); *in arenosis maritimis prope Goa et alibi in vicin.* Sebastianop. [= Rio de Janeiro], *C. F. P. v. Martius* (M; on the sheet is written, in ball-point pen, apparently by Dr. James A. MEARS of Philadelphia, "HOLOTYPE", and there is a red label, also with the word "HOLOTYPE". I would hesitate to consider this specimen the actual holotype of *Bucholzia maritima*, as it does not appear to be mentioned in the protologue, but the handwritten text on the label, including the words "*Bucholzia maritima* Mart. N. G. t. 147" were written by MARTIUS himself, so it is at least an authentic specimen, and as I have not been able to locate the material cited in the *Nova gen. sp.*, it is an acceptable neotype, until a holotype can be found. This specimen, and the SAINT-HILAIRE specimen mentioned above, are to me exactly alike); Au bord de la mer à Copacabana près de Rio de Janeiro, *A. de Saint-Hilaire s.n.* (P, type of *Alternanthera maritima* var. *concatenata* : this is merely a specimen with small leaves); Rio de Janeiro, *Lund s.n.* (G-DC : this specimen is labelled in MOQUIN-TANDON's hand "*Teleianthera maritima* Moq.  $\beta$  *parvifolia* Moq." and so reflects his concept of *Saint-Hilaire's* variety, which agrees with the description. The specimen is a profusely flowering shoot, and, as is usual in this case, the leaves are smaller than on a mainly vegetative shoot).

1d. *A. littoralis* var. *sparmannii* (Moq.) Pedersen, *comb. nov.*

- *Telanthera maritima* var.  $\delta$  *sparmannii* MOQ., in DC., Prodr. 13 (2) : 365 (1849).  
— *Alternanthera maritima* var. *sparmannii* (MOQ.) MEARS, Proc. Acad. Sc. Philadelphia 129 : 11 (1978, "1977").

Apparently, to judge from his annotation-slips as seen in herbaria I have visited, MEARS will refer all African material to one variety, for which he uses the name *sparmannii*; according to the synonymy here applied, this must be called var. *littoralis* as it includes the type of the species. This concept is perfectly defensible and logical, but, as explained in the following, it may be practical to recognize more than one African variety, and to restrict the var. *sparmannii* to comprise only the material with persistently hairy leaves, as MOQUIN-TANDON described it.

MATERIAL SEEN. — Without indication of locality, *Sparmann s.n.* (P, type; according to the protologue, this specimen should have been collected at the Cape of Good Hope, from where I have never seen any material of the species, so presumably it must be mislabelled). — SENEGAL : *Roussillon s.n.* (G-DC, paratype, in MOQUIN-TANDON's hand labelled "*Teleianthera maritima* Moq.  $\delta$  *Sparmannii* Moq."); *Dupuis 52* (G); *Guillemin s.n.* (Z); *Perrotet s.n.* (G); Cap Vert, *Adam 265* (P); Dakar, *Chevalier 3449* (K, P), *15781* (P), *Hagerup 778, 778a* (C, K), *Berhaut 354* (BR, Z); Djembering, *Broadbent 141* (K); Goree, leg.? (BM); Hiayes, *Trochain 680* (P); Joal, leg.? (K, *ex herb. Gay*); Kayar, *Risby 18* (K); Lac Retba, Prov. Cap Vert, *Thoen 7205* (BR); plages St. Louis, *Andru 2432* (P); "in sabulosis marit. Pointe de Barbarie prope St. Louis", *Leprieur s.n.* (G, P); Barbarie S., *Trochain 2124* (P); cercle de Thies, Marigot de M'Bour, *Wailly 4631* (P), *Roberty 15162, 16783* (G). — GAMBIA : *Don s.n.* (BM), *Hayes 504* (K); Bathurst, *Lowe 2525* (K); entre Bathurst et Cape St. Mary, *Roberty s.n.* (Z); « croît à l'embouchure de Casamance », Hendelot, *herbier de Senegambie 616* (G, P); environs de Karabane, leg.? (G, P). — Former Portug. Guinea : Espirito Santo, *Seisaira, Varela 2284* (BR).

The three African varieties here recognized are admittedly not very clearly defined. The principal character used to separate them is the indument. None of the three is completely devoid of hairs, but while in the var. *littoralis* the perianth is usually conspicuously hairy, the vegetative parts, except for a ring of hair at the nodes of the stem, are hairy only when very young, glabrescent or often completely glabrous at maturity; in the var. *sparmannii*, on the



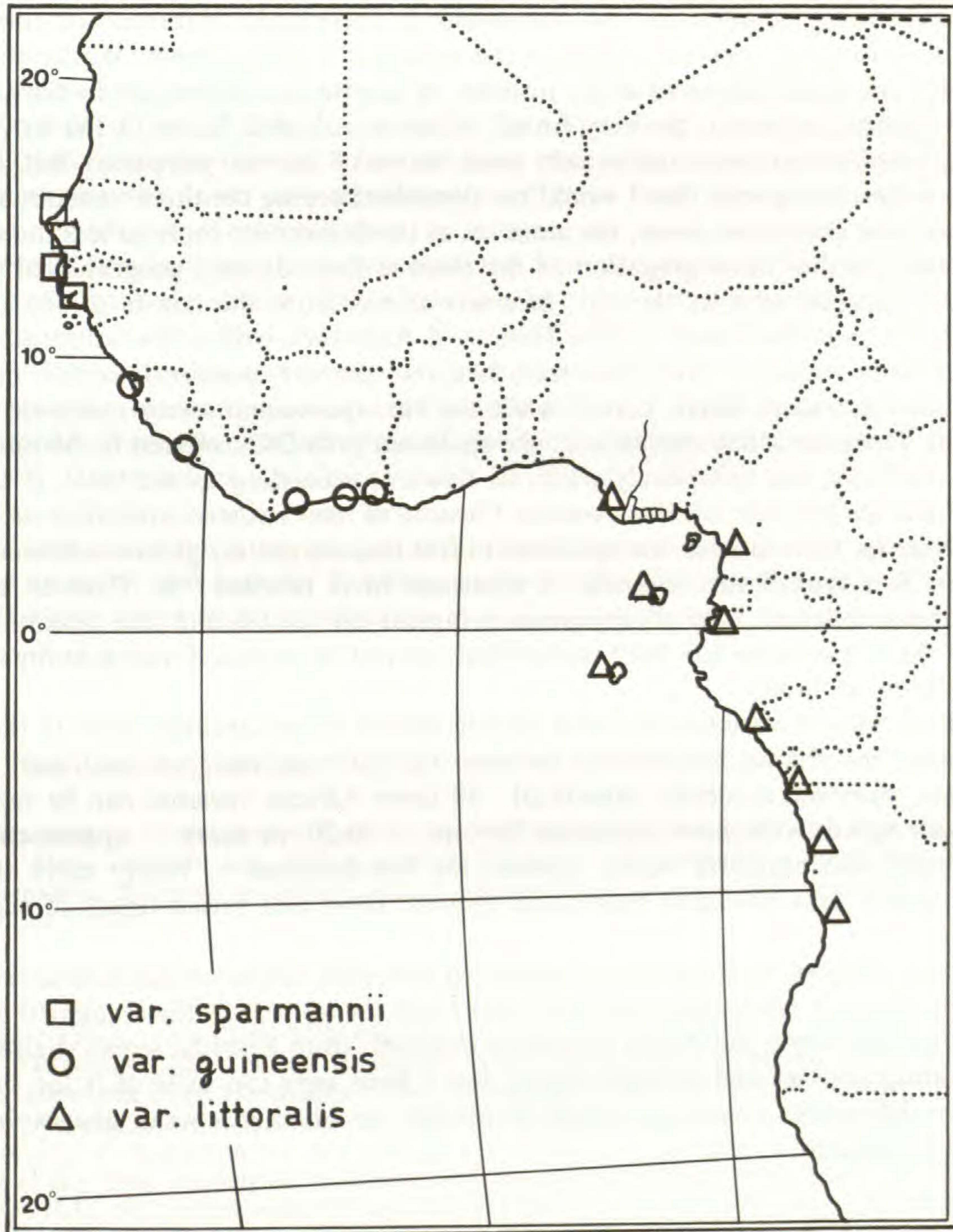


Fig. 1. — *Alternanthera littoralis* : Outline of the west coast of Tropical Africa, showing the distribution of the three African varieties recognized. (As collectors tend to visit the same places, one mark may indicate several collections; at the same time, a number of collections cited have not been taken into consideration for this purpose, being poorly localized, or from localities impossible to locate on a map).



other hand, the young stem and leaves are always hairy, often densely so, and although the upper surface of older leaves usually becomes glabrous, the vegetative parts as a whole still give the impression of a hairy plant, while the tepals from the first are glabrous or with a few inconspicuous hairs; finally, the var. *guineensis* is completely glabrous, or almost so; in particular, I have never seen any hairs on the perianth. In this respect, it resembles the var. *maritima*. On the examination of a fair number of specimens, differences in the shape of the leaves also become apparent, the very broad, blunt or rounded leaves of the var. *sparmannii* contrasting with the narrower and usually acute leaves of the var. *guineensis*, but leaf-shape is so variable within the species that I would not consider keeping the three varieties apart on the basis of these two characters alone, the more so, as the flowers are more or less the same. What in my opinion justifies the segregation of the three is their distinct geographical distribution (Fig. 1): all material seen of the var. *littoralis* comes from the coasts of the Cameroons, Congo, Angola, and the islands of São Tomé and Annobon, with a few collections — one of them doubtful or mixed — from Southern Nigeria; the var. *guineensis* occurs on the Ivory Coast, in Liberia, and in Sierra Leone, while the var. *sparmannii* seems restricted to Gambia and Senegal. There are a few exceptions: the specimen in G-DC, referred by MOQUIN-TANDON to var. *a communis*, has completely glabrous flowers; according to the label, it should have been collected by PALISOT DE BEAUVOIS in Oware; of the TALBOT collection no. 3095 from Southern Nigeria, Eket district, the specimen in BM has completely glabrous flowers, while the specimen in Z is typical var. *littoralis*; a specimen in G labelled "St. Paul de Loanda" in Angola without collector, is to all appearances typical var. *sparmannii*; the possibility that one or more of these specimens has been mislabelled can not be excluded, nor that my observation may have been at fault.

The three African varieties are more closely related to one another, than to the American var. *maritima*; the chance resemblance between the glabrous var. *guineensis* and the equally glabrous var. *maritima* is merely superficial: all three African varieties can be recognized by their elongate spikes with more numerous flowers — 10-20, or more — appressed bracts and flowers, longer and narrower tepals, against the few-flowered — rarely more than 7 or 8 flowers — spikes with divergent bracts and flowers, short and broad tepals of the American plant.

While the African material can be separated into three more or less distinct varieties, the American material is remarkably uniform, and I can see no reason for recognizing any of the varieties proposed. Only the North American material, from Florida, seems slightly different, with very much shorter and broader tepals, but I have seen too little of it for me to judge, whether the differences noted are merely fortuitous, or whether a weak geographical variety should be recognized.

## 2. *Gomphrena boliviana* Moq.

- In* DC., Prodr. 13 (2) : 401 (1849).
- *Xeraea boliviana* (MOQ.) O. KUNTZE, Rev. Gen. Pl. 2 : 545 (1891).
- *Alternanthera boliviana* (MOQ.) USTERI, Fl. umgeb. S. Paulo : 178 (1911).
- *Gomphrena globosa* var.  $\gamma$  *albiflora* MOQ., *l.c.* : 409 (1849), *pro minima parte*.
- *Gomphrena acrotepala* SUESSENG., Feddes Repert. 35 : 309 (1934).



*Xeraea boliviana* (Moq.) O. Kuntze and *Alternanthera boliviana* (Moq.) Usteri are both based on *Gomphrena boliviana* Moq.; unfortunately I have not seen any material referred by USTERI to *Alternanthera boliviana*, so I do not know what he meant by this curious transfer, but it seems unlikely in the extreme that the plant cited by him belongs here. *G. acrotepala* was based on two collections from the Argentine province of La Rioja: a specimen collected by J. S. URRICHE at Soto, probably in the dept. of R. V. Peñaloza, and *Stuckert 17218* from La Diana in the dept. of San Martín. It seems that the URRICHE specimen is generally accepted as the type, though to my knowledge it has not been expressly designated the lectotype. Neither this specimen nor the other are significantly different from the specimens in the WEBB Herbarium and MOQUIN-TANDON's own herbarium, on which he based his species.

*Gomphrena boliviana* has been synonymized with *G. martiana* Gill. ex Moq. by most authors. I agree with HUNZIKER (1971) that they are two distinct species; to the characters separating them may be added the shape of the filaments: in *G. boliviana* truncate, or with three minute lobes pointing forwards, in *G. martiana* with more or less distinct lateral lobes pointing outwards, in some specimens only apparent as a slight bulge below the apex, in others, especially from the northern part of the range, almost in the shape of small hooks. Unfortunately, intermediate specimens may be found: *Hawkes et al. 4284* from near Cochabamba in Bolivia has the short bracts of *G. martiana*, while the filaments are more like those of *G. boliviana*. Nor is the geographical distribution of the two the same, *G. boliviana* being more westerly, and scarcely reaching as far to the North and South as *G. martiana*; ecologically, these seems to be a difference too, *G. boliviana* being by far the more suited to invade disturbed ground.

2a. ***G. boliviana* fa. *boliviana*.** — Synonyms as above.

MATERIAL SEEN. — “*culta in hort. Luxemb. aug. 1836 e seminib. Bolivianis*” (FI, type, also a fragment in CORD); “*Hort. Luxemb. aug. 1836 e seminib. Bolivianis*” (P, probably a duplicate); “*Gomphrena quaedam e seminibus Bolivianis in Galliam quae cl. Martin M. D. advenit*” (BR, probably a seedling or a duplicate of the type).

ADDITIONAL MATERIAL (a total of 131 collections have been revised; because of the weedy nature of this taxon, only the localities of critical or otherwise interesting specimens are given in detail). — BOLIVIA: Dpto. Tarija: ruta Tarija-Villa Montes, Cañadas, 156 km E de Tarija, *Krapovickas et al. 19199* (CTES). — PARAGUAY: Dep. Nueva Asunción: ruta Trans-Chaco 21°16'S-61°25'W, *Schinini 16442* (CTES). — ARGENTINE, Prov. Catamarca: “Bei Catamarca häufig”, 10.11.1872, *Lorentz & Hieronymus 1239* (G, K: *Phloxeris heliotropifolius* Gr., det. A. GRISEBACH); also *P. L. Spegazzini (BAB-32802)*, *Balou (BA-10285)*, *C. Spegazzini s.n. (Z)*, *Ulibarri 431* (CORD), *J. Brizuela 19* (LIL, M). Dep. Ambato: *J. Müller 21* (LIL). Dep. Andalgalá: *Cabrera 1039 p.p. (LP)*, *Hauman (BA-32329, 32330)*, *Jørgensen 1102* (SI), *1688* (LIL, SI), *Schickendantz fl. arg. 227* (CORD), *Vervoorst 3588* (LIL). Dep. Belén: *Cabrera (LP-22869)*, *Lorentz & Hieronymus s.n. (CORD)*, *Peirano (LIL-12715)*, same (*LIL-12844*, M), *Sayago 1577* (SI), *Schickendantz fl. arg. 39* (CORD, G), *293* (CORD, K), *Schreiter s.n. and 10307* (M), leg.? *181 (LIL-132367)*. Dep. Capayán: *J. Brizuela 55, 98* (LIL, M), *Risso 1080* (LIL, *G. acrotepala* det. E. HOLZHAMMER). Dep. Fray N. Esquiú: *B. L. Müller 129* (M). Dep. La Paz: *A. Brizuela 997* (LIL), *J. Brizuela 66* (CTES), *278, 618, 981, 1011* (LIL), same *419* (C). Dep. Pomán: *Biloni 6754* (SI). Dep. Pomán?: rivera del río Pisavil, *Fiebrig (LIL-368499)*. Dep. Santa María: *Arague & Barkley 19Ar541* (LIL), *Morello (LIL-505180)*, *Reales 831, 920, 1108, 1655, 1791* (LIL), *Villafañe 1207* (LIL). Dep. Tinogasta: *Birabén & Birabén 1068* (LP), *Castellanos (BA-30/144)*, *A. T. Hunziker 15219* (CORD). — Prov. Córdoba, dep. Cruz del Eje: San Agustín, *Hieronymus 251* (P). Dep. Ischilín: *A. de la Sota 3836*



(LIL). Dep. Río I : *Balegno* 1046 (C, LIL). — Prov. Jujuy, dep. Capital : *Castillon* 493a (LIL), *Herrera* 459 (S). — Prov. La Rioja, dep. Capital : *Cabrera* 1011 (LP), *Clos* 5429 (BAB), *A. T. Hunziker* 19032. Dep. Chilecito : *A. T. Hunziker* 22579 (CORD), *Morello* (LIL-505179), *Pedersen* 15299 (C). Dep. Famatina : *Covas* 1248, 1300 (LP), *T. Meyer* 4251 (LIL). Dep. Gral. Belgrano : *Gómez* (BA-29/181). Dep. Gral. Lavalle : *T. Meyer* 4132, 4209 (LIL). Dep. Gral. J. F. Quiroga : *Roig* 7753 (PEDERSEN). Dep. Independencia : *A. T. Hunziker* 14297 (CORD), *Hayward* (LIL-80219). Dep. R. V. Peñaloza : Soto, Represas, 21.3.1906, *J. S. Urriche* s.n. (B, syntype of *Gomphrena acrotopala* Suesseng.), *A. T. Hunziker* 13851 (CORD). Dep. San Blas de las Sauces : *Rojas Paz* (LIL-64739). Dep. San Martín : estancia La Diana, 12.3.1907, *Stuckert* 17218 (CORD, isosyntype of *Gomphrena acrotopala* Suesseng.). — Prov. Mendoza : Mendoza city and vicinity, *A. Ruiz* 130 (BA-25/1930), *C. Spegazzini* 119 (Z). Dep. Gral. Lavalle : Guanacache, *Gillies* s.n. (K, “*Gomphrena eriopoda* n.sp.” scrips. J. GILLIES; “*Gomphrena globosa* Linn. var.  $\gamma$  *albiflora* A. M.” scrips. A. MOQUIN-TANDON). Dep. Las Heras : “in viciniis montis Aconcagua” 2.3.1903, *Malme* (S, syntype of *Gomphrena lanceolata* R. E. Fries); *Ruiz Leal* 9239 (CORD, M), 9766 (M), 15142 (CORD, M), *Sanzin* 315 (SI), *Semper* s.n. (LIL-98497), 219 (LIL, S). Dep. Luján : *A. Ruiz* 619 (BA). Dep. Tunyán : *Poci* 844 (LIL). — Prov. Salta, dep. Anta : *Luna* 931 (M, doubtful). Dep. Cafayate : *Cabrera et al.* 27276 (SI), *Cabrera & Marchionni* 13082 (LP), *Castellanos* (BA-46710), *Hayward* 2057 (CTES), *Hunziker & Di Fulvio* 21045 (CORD), *Pedersen* 13959 (C). Dep. Molinos : “in vallis aridissimis Valle Calchaquí vocata prope Molinos” *C. Spegazzini* 100 (Z). — Prov. San Juan, dep. Capital : *Ariza Espinar* 1373 (CORD). Dep. Caucete : leg. ? 164 (BAB-23718), *Borsini* 1241 (C), *Fabris & Marchionni* 2321 (LIL, LP), 2323 (C), *A. R. Cuezco* 1075 (LIL), *Roig* 1765 (PEDERSEN). Dep. Jáchal : *Böcher, Hjerting & Rahn* 2258 (C), *Cuezco* 1963 (LIL), *Guaglianone et al.* 1748 (SI), *Kiesling et al.* 6276 (SI). Dep. Pocito : *Cuezco* 2115 (LIL). Dep. Sarmiento : *Cuezco* 1547 (K), 1687 (LIL), *Nicora* 4292, 8335 (SI), *Pedersen* 11754 (C). Dep. Ullún : *Ariza Espinar* 1293 (CORD), *Cabrera* 30040 (SI), *Kiesling* 6791 (SI), *Pedersen* 15216 (C, SI), *Rodrigo* 3099 (LP). Dep. Valle Fértil : *Kiesling* 4505 (SI). Dep. Zonda : leg. ? (BAB-22095). — Prov. San Luis, dep. Gral. Belgrano : *Hunziker & Coccucci* 16410 (CORD). Dep. Pedernera : *Anderson* 1047 (CORD). — Prov. Tucumán, dep. Tafí : *Birabén & Birabén* 1518 (LP), *Hunziker & Di Fulvio* 21043 (CORD), *Morello* 1277 (SI).

2b. *G. boliviana* fa. *leiantha* Pedersen, fa. nov.

*A fa. boliviana recedit tepalis omnino glabris. Floccus lanæ infra basin eorum sæpe adest, sed pedicello pertinet, nec tepalis.*

TYPUS : *Hunziker & Di Fulvio* 21047, Argentina, Prov. Salta, dep. Cafayate : Tolómbon, entre el límite con Tucumán y Cafayate, 1500 m, 7.4.1971 (holo-, CORD).

The only constant character separating this form from the fa. *boliviana* seems to be the completely glabrous tepals as opposed to the fa. *boliviana*, in which they all are densely woolly on the back; as this character is easily observed, this form should deserve a name. The filaments in the few specimens examined are truncate at apex, with no trace of lateral lobes, unlike those usually found in the fa. *boliviana*.

FURTHER MATERIAL SEEN. — BOLIVIA, dep. Tarija : ruta Tarija-Villa Montes. Entre Ríos, 1330 m, orillas del río, *Krapovickas et al.* 19049 (CTES). — ARGENTINE, prov. Catamarca, dep. Fray M. Esquiú : Piedra Blanca, *B. L. Müller* 108 (C). — Prov. Córdoba, dep. Cruz del Eje : al N de Cruz del Eje rumbo a Medio Naranjo, *A. T. Hunziker* 12335 (CORD); cerca de Tuclame, *A. T. Hunziker* 9109 (CORD). Dep. Ischilín : Deán Funes, *Hicken* 5539 (SI, *Philoxerus heliotropifolius* Griseb. fa. *robusta* Hicken mss.). — Prov. La Rioja, dep. Gdor. Gordillo : Chamental, *Ruiz Leal* 16660 (M). — Prov. Mendoza, Capital : pr. Parque San Martín. *Ruiz Leal* 5774 (M). Dep. Las Heras : Panquhuana, *García* 302 p.p. (K). — Prov. San Juan, dep. Valle Fértil : San Agustín de Valle Fértil, *Roig* 8408 (PEDERSEN).



2c. *G. boliviana* fa. *robusta* (Hicken) Pedersen, *comb. nov.*

- *Iresine heliotropifolius*<sup>1</sup> fa. *robusta* HICKEN, *Physis* 1 : 28 (1912).
- *Gomphrena lanceolata* R. E. FRIES, *Ark. Bot.* 16 (12) : 26 (1920).
- *Gomphrena boliviana* var. *lanceolata* (R. E. FRIES) PEDERSEN, *ined.*, *in schedis nonnullis*.

As the name implies, HICKEN considered the large size of his plant the most salient character separating it from the fa. *boliviana*. However, this character is worthless; I have seen huge specimens of the fa. *boliviana*, 1 m or more across, in the field. An examination of his type specimen in SI showed that the outer tepals are glabrous, only the inner hairy, as opposed to the fa. *boliviana*. This character it shares with *G. lanceolata*, as FRIES expressly states in his description of the species. He cites three specimens, all from the Argentine province of Mendoza, in the following order: "in viciniis montis Aconcagua. c : a 2700 m. s. m." leg. Malme (S), Santa Rosa 1905 leg. A. C. Jensen-Haarup (C), and Coria, leg. P. Jörgensen no. 221 (C). Of these three, the first named has been labelled "Typus". I can not accept this as the type, as all the tepals are conspicuously hairy, and so do not agree with FRIES' description. Of the other two, the adaxial and the outer abaxial tepals of the JÖRGENSEN specimen are glabrous, while the inner abaxial tepal in most flowers examined is more or less hairy; the JENSEN-HAARUP specimen has all three outer tepals completely glabrous as described by FRIES, for which reason I designate this the lectotype of *Gomphrena lanceolata* R. E. Fries.

HUNZIKER (1971) relegates *G. lanceolata* R. E. Fries to the synonymy of *G. boliviana*. There is, however, a slight difference in the indument of the tepals, and usually also in the shape of the filaments, which in the type specimen, and most other specimens of *G. boliviana* with all the tepals hairy, are minutely 3-lobed at the apex, while there are no traces of lateral lobes in the filaments of *G. lanceolata*. Because of this, I originally considered the two sufficiently distinct to be segregated at varietal level, intending to use FRIES' specific name. Since then I have found that these two characters do not always seem to be correlated, and the lack of hairs on the outer tepals by itself does not justify the segregation at higher level than forma — at the most — in which case HICKEN's name must be used. Unfortunately, I have used the name *Gomphrena boliviana* var. *lanceolata* on numerous annotation-labels.

MATERIAL SEEN (for the same reasons as with the fa. *boliviana*, the exact localities of collections of minor interest are omitted). — ARGENTINE, Prov. San Luis, dept. Capital : Rio Bebedero, Paso de los Algarrobos, 28.3.1911, Franco Pastore 82 (SI, type of *Iresine heliotropifolius* fa. *robusta*). — Prov. of Catamarca, Capital, Castillon 897 (S, LIL), Jörgensen 1102 (SI), Lillo 897 (LIL), Varela 19 (LIL). Dep. Ancasti : Brizuela 1080 (LIL). Dep. Andalgalá : Jörgensen (LIL-12551). Dep. Belén : Schreiter 10307 (LIL). Dep. Capayán : Luna Risso 1044 (LIL), D. L. Müller 153, 175 (LIL), Subils 588 (CORD). Dep. Fray M. Esquiú : D. L. Müller 69, 108 (LIL). Dep. La Paz : A. Brizuela 419, 639, 1041, 1074 (LIL), J. Brizuela 66, 115, 193, 621, 791 (LIL), 665 (K), 831 (C). Dep. Santa María : Reales 1270, 1791 (LIL), Villafañe 1235 (K), 1266 (LIL). Dep. Valle Viejo : A. T. Hunziker 21018 (CORD). — Prov. Córdoba, dep. Cruz del Eje : A. Cuzzo 942 (LIL), Ragonese & Piccinini 6160 (LIL). Dep. Ischilín : J. Brizuela 912 (LIL), Villafañe 151 (LIL). — Prov. La Rioja, dep. Capital : Giacomelli 4721 (G, LIL). Dep. Chilecito : H. Pérez, ex herb. Ruiz-Leal 7896 (M). Dep. Gral. Juan Facundo Quiroga : Roig 7753 (PEDERSEN). Dep. Gral. San Martín : Hunziker & Caro 13578 (CORD). Dep. Independencia : Pedersen 11807 (C). —

1. The use of the masculine form is probably explained by GRISEBACH's originally having described the species as *Philoxerus heliotropifolius*, and HICKEN's automatic transfer of all species of *Philoxerus* to *Iresine*, without correcting the gender of the epithet.



Prov. Mendoza, dep. Junín : *Pedersen 11745* (C). Dep. La Paz : *Ruiz Leal 8534, 8816* (M). Dep. Las Heras : *Burkart 2162* (S), *García 302* (LIL), *Ruiz Leal 15412* (M), *Villafañe 1090* (S). Dep. Luján : Chacras de Coria, *P. Jörgensen 221* (C, syntype of *G. lanceolata* R. E. Fries, see above); Maipú, *A. Ruiz 372* (BA), *Santa Rosa 1905*, *A. C. Jensen-Haarup s.n.* (C, lectotype of *Gomphrena lanceolata* R. E. Fries, see above). — Prov. San Luis, dep. Ayacucho : Luján, *Covas 1149* (SI). — Prov. Tucumán, dep. Tafí : *J. Brizuela 55, 167* (LIL).

### 3. *Gomphrena martiana* Gillies ex Moq.

In DC., Prodr. 13 (2) : 400 (1849).

*G. martiana* was described from a specimen collected by GILLIES at El Morro, Prov. of San Luis, Argentine; the tepals of this specimen, seen at K, are abundantly hairy. The species ranges from Southern Bolivia and the Gran Chaco in the North, through Central and Western Argentine as far south as the provinces of Mendoza, La Pampa, and Buenos Aires. Mainly towards the southern part of its range is found a form with glabrous tepals.

#### *G. martiana* fa. *austrina* Pedersen, fa. nov.

A fa. *martiana* recedit tepalis omnino glabris.

TYPUS : *T. M. Pedersen 14533*, Argentina, Prov. San Luis, dep. Gobernador Dupuy : near Unión. Roadside, open scrub, 9.3.1986 (holo-, C; iso-, CORD).

FURTHER MATERIAL SEEN. — PARAGUAY : “Paraguaria centralis” 1885-1895, *E. Hassler 90* (BM). — ARGENTINE, Prov. Buenos Aires, pdo. Pellegrini : Salliquelo, *Cabrera 7517* (LIL). — Prov. Catamarca, dep. Capital : San Fernando del Valle de Catamarca, *Castillon 14144* (LIL), *Santos Beloni 6337* (SI). Dep. Ancasti : La Brea, *Brizuela 1314* (LIL); Río Chico, *J. Brizuela 762* (LIL). Dep. Fray M. Esquiú : Piedras Blancas, *B. L. Müller 129* (LIL); Polcos, entre Banda de Varela y Capilla de la Virgen de Rosario (ruta 62) 700 m, *A. T. Hunziker 22533* (CORD). Dep. La Paz : El Aropaco, *J. Brizuela (LIL-340136)*; El Divisadero, *Brizuela 1134* (LIL); La Paz, *A. Brizuela 533* (LIL); Monte Redondo, *J. Brizuela 317* (LIL). — Prov. Córdoba : City of, *Otto Kuntze s.n.* (Z), *Castellanos s.n.* (SI), *Hieronymus s.n.* (BR, K). Dep. ? : Chacra de la Merced, *M. & A. Galander ex herb. Kurtz. 8690* (CORD). Dep. ? : Estancia Germania, *Lorentz, fl. arg. no. 33* (BR, K, *Philoxerus heliotropifolius* Gr. scrips. A. GRISEBACH). Dep. Calamuchita : Valle de los Reartes, *A. Castellanos (LIL-36382)*. Dep. Colón : Ascochinga, *Giardelli 888 p.p.* (SI); Salsipuedes, *Davidson 72* (SI); Villa Allende, *Burkart 7172* (SI). Dep. Cruz del Eje : C. del Eje, *O'Donell & Rodríguez 614* (LIL); Dique C. del Eje, *O'Donell 4461* (LIL); Sierras San Marcos, *Villafañe 304* (LIL). Dep. Gral. San Martín : Est. Chañares, *Hicken 5478* (SI). Dep. Gral. Roca : Cañada Verde, *A. G. Schulz 6026* (LIL). Dep. Río IV : tramo de ruta 4 a Villa Mercedes, km 764, *Nicora 4223 p.p.* (SI). Dep. Río Seco : inmediaciones de San Miguel en el camino que lleva a San Francisco del Chañar (ruta prov. no 22), *A. T. Hunziker 11059* (CORD). Dep. Río II : Pilar, *Subils 2253* (CORD). Dep. San Alberto : entre Mina Clavero y Cerro La Gloria, *O'Donell & Rodríguez 762* (K). Dep. San Javier : Luyaba, *Castellanos (BA-10433)*; RA-148, where the road to Yacanto branches off, *Pedersen 11714* (C); San Javier, *Castellanos (BA-10431)*; entre San Javier y Las Rosas, *A. T. Hunziker 11466* (CORD); Villa Dolores, *T. Meyer 13631* (LIL); Yacanto, *Castellanos (BA-10435)*. — Prov. La Pampa, dep. Catrilo : Catrilo, *Chicchi 272* (SI), *Fortuna 46* (LIL); La Gloria, *Fortuna s.n.* (S); Lonquimay, *Fortuna 63* (LIL). — Prov. Mendoza, Dep. San Rafael : “Dünen am Rio Diamante gegenüber Fortín Nuevo”, *F. Kurtz 7036* (Z). Dep. Santa Rosa : Ñacuñán, *Roig 5429* (PEDERSEN). Dep. Tupungato : La Esquina, *Ruiz Leal 1207* (SI); pr. Finca Los Helechos, *Ruiz Leal 1262* (SI). — Prov. San Luis, dep. Capital : Alto del Yeso, *J. Miers 635* (BM); “in pratis aridis circa San Luis”, *C. Spegazzini s.n.* (Z); between San Luis and Río V, *J. Miers s.n.* (BM);



Chischaca, *Castellanos* (BA-25/2810); cerca de San Jerónimo, *Cabrera* 17885 (LP). Dep. Gdor. V. Dupuy : Batavia, *Molfino s.n.* (BAB). Dep. Gral. Pedernera : 20 km al S de Nueva Escocia, 860 m, *Anderson s.n.* (CORD); ruta 148 entre Lunita y ea. Tafiola, *Cano* 3154 (BAB). Depts. Gral. Pedernera/Cnel. Pringles : ruta 7 entre V. Mercedes y Fraga, *Cano* 3319 (BAB). Dep. Cnel. Pringles : Trapiche, *Gez* (BA-31258). — Prov. Santiago del Estero : Ciudad de S. E., *Dihullo* 43 (BM). — Prov. Tucumán, dep. Capital : San Miguel de Tucumán y alrededores, *Dinelli* 828 (BAB). Dep. Trancas : Tapia, 700 m, *Lillo* 18 (CORD), *Rodríguez* 263 (SI), Trancas, junto a la vía férrea, *Cabrera* 3052 (S); Vipos, 800 m, *Venturi* 57 (BA).

#### 4. *Gomphrena meyeniana* Walp.

Nova Acta Acad. Caes. Leopold-Carol. Nat. Cur. 16, suppl. 2 (= 19, suppl. 1) : 404 (1843).

This extremely variable species from the higher Andes has attracted the attention of several taxonomists, unfortunately not always with the best results. It is found from southern Perú through Bolivia to northern Chile and the Argentine provinces of Salta, Jujuy, Tucumán, and Catamarca, and varies in habit, shape of leaves, indument, and apparently also in the colour of the flowers. In the following, little attention is paid to variations in shape of leaves, indument, and colour, as I have been unable to correlate such variations with other characters that could be of taxonomic significance. This is not to say that forms based on characters not considered here might not be genetically fixed, but this would have to be established by experimental cultivation through some length of time, and could result in multiplying the infra-specific taxa to an impossible extent. Very likely the mountainous nature of the area the species inhabits provides numerous barriers that prevent interbreeding between the various populations and so has favoured the evolution of more or less stable local races. Probably it is this bewildering number of forms that has prompted authors like STANDLEY (1937) not to accept any division of the species. On the other hand, I believe it possible and of some use to distinguish at least five varieties, which may be separated by the following key :

- A. Flowering stem scapose, without other leaves than the leafy bracts of the involucre.
  - B. Tepals all glabrous ..... a. var. *meyeniana*
  - B'. At least some tepals hairy.
    - C. Three outer tepals glabrous, or sometimes a line of hairs on the covered side of the inner abaxial tepal, two inner tepals hairy ..... e. var. *genuina*
    - C'. Tepals all hairy ..... c. var. *conwayi*
- A'. Flowering stem usually with leaves.
  - D. Outer tepals — sometimes all — generally glabrous.
    - E. Lateral lobes of filaments O or scarcely indicated. Flowering shoots occasionally branching. .... f. var. *tucumanensis*
    - E'. Lateral lobes of filaments distinct. Flowering shoots never branching ..... d'. var. *flaccida* fa. *levitepala*
  - D'. Tepals all hairy; lateral lobes of filaments normally distinct. Flowering shoots apparently never branching.
    - F. Flowering shoots stiffly upright; cauline leaves mostly alternate .... b. var. *caulescens*
    - F'. Flowering shoots flaccid, decumbent; cauline leaves often opposite ..... d. var. *flaccida* fa. *flaccida*



4a. *G. meyeniana* var. *meyeniana*

— *Gomphrena meyeniana* var. *aureiflora* STUHL., Beih. z. Bot. Centralbl. 30 (2. Abteil.) : 406 (1913), *nomen*; Feddes Repert. 12 : 521 (1913).

A sheet in B bears the following labels : 1) “*Gomphrena* (*Hebanthe* Mart.) *Meyeniana* Walp. / Peru — In planit. circa Tissaloma 4/31 / 15000. / F. J. F. MEYEN ded. 1833”. — 2) “Ex Herb. Kunth. / *Gomphrena Meyeniana* / Walpers / Peru — In planit. circa Tissacoma 4/31 / 15000. Meyen”. — 3) “*G. Meyeniana* Walp. var. *aureiflora* Stuchlík / Zürich 10 09 12 / Jar. Stuchlík”. I have not been able to identify with certainty the hand that wrote the name on label (1), but suppose it to be WALPERS’; the name on label (2) appears to be written by KUNTH; label (3) is in STUHLÍK’s very characteristic handwriting.

*Gomphrena meyeniana* var. *aureiflora* was based on the material in B of P. G. Lorentz “58 et 567” (the latter is probably Lorentz & Hieronymus 567), and on the MEYEN specimen. Of the three syntypes cited, the only one now present in B is the MEYEN specimen; the other two are presumably lost. For this reason, I will consider the MEYEN specimen the lectotype of *Gomphrena meyeniana* var. *aureiflora* Stuhl.; with this lectotypification, the name automatically falls into synonymy. (STUHLÍK’s “var. *genuina*”, on the other hand, from the material cited does not comprise the type of the species.)

The tepals of the var. *meyeniana* are glabrous; their colour may vary from whitish to shades of yellow, for which reason STUHLÍK (1913a, b) divided the species into three varieties, based on the colour of the flower. The range of the var. *meyeniana* is that of the species.

ADDITIONAL MATERIAL SEEN. — “America meridional.” *Cuming s.n.* (UPS, “*verisim. Chile vel reliquae*” scrips.?). — PERU, loc.?, *Weddell s.n.* (P). — Dep. Arequipa, prov. Gaylloma : between Tuti and Sibayo, 3700 m, *Ragnhild Liljekvist 157* (C). — Dep. Puno, prov. Carabaya : Pampa de Lacka 4360 m, *Vargas C7121 p.p.* (BM). Prov. San Roman : Tincopalca 4200 m, *Rauh & Hirsch P632a* (HEID). — BOLIVIA, loc.?, *Bridges s.n.* (BM). — Dep. Chuquisaca, prov. Mendoza : Tomina, *Weddell 3913 p.p.* (P). — Dep. Cochabamba, prov. Cercado : Puna de Putuyumi, 4000 m, *Steinbach 4079 (p.p.?)* (LIL, M). — Dep. La Paz, prov. Sud Yungas : Chulumani, 4000 m, *A. Bridarolli 4303* (LP); Prov. Murillo : am Chacaltaya 4500 m, *Buchtien 9374* (G, HB, K, M, S); vicinias urbis La Paz, via ad Coroico, Lancha, Cucuta, 4000-5000 m, *Mandon 1017 p.p.* (BM, K); Talca Chugiagiullo, *Miguel Bang 812 p.p.* (BM, K). — Dep. La Paz? “Andes and Yungas” 14.000-15.000 ft., *Pearce s.n.* (BM, K). — Dep. Potosí, prov. Surlipez : usina Corina, ca. 4300 m, *Barbara Ruthsatz 875* (PEDERSEN). — CHILE, prov. Tacna, dep. Tacna : Cordillera, Volcan Tacora, Chislluma, 4500 m, *Werderman 1154* (E). — Prov. Tarapacá, dep. Tarapacá : Cordillera de Tarapacá, leg.?, “*comm. R. A. Philippi*” (E); co. Columfusca, La Escalera, 4400 m, *Werderman 1078* (E, G, K, M, S). — ARGENTINE, Prov. Catamarca, dep. Capital : El Rodeo, *Castillon 2054* (LIL). Dep. Capital? sierra de Ambato (falda E) subiendo desde El Rodeo hacia el cerro Manchado, 2900-3100 m, *A. T. Hunziker 19172* (CORD, PEDERSEN). Dep. Ambato : cerro El Manchado, 3500 m, *Goldbach 411, 481* (LIL). Dep. Andalgalá : sierra Aconquiya, cerro Negro, falda sur, *Rohweder (LIL-63972)*; cerro del Campo Grande, *Schickendantz 147* (GOET); cerro Puñal, 3800 m, *Rohweder (LIL-29332)*; Cuesta de Capillitas, *C. L. Cristobal 503 (LIL-474766 p. min. p.)*, *Cabrera et al. 14115* (LP); La Ollada, *Jørgensen 1106 (LIL-12515, 18787 p.p.)*; río Potrero superior, 3200 m, *Sleumer 1888* (LIL). Dep. Belén, loc.?, *Castillon (LIL-12793)*; Alpen von Belén, Vayas Altas 9-10.000’, *Lorentz 593* (GOET); cuesta de Nacimientos, camino a Laguna Blanca, *Legname & Vervoorst 65* (LIL); Portezuelo de r. Blanco arriba de Granadillos, 2950 m, *Sleumer & Vervoorst 2540* (LIL). Dep. Pomán : Rincón, *Castillon (LIL-12796)*. Dep. Tinogasta : La Tranca a La Cupito, 3300 m, *Schreiter 6229* (LIL). — Prov. Jujuy, dep. Capital : refugio del nevado de Chañi, 4200 m, *Fabris et al. 4030* (LP). Dep. Humahuaca : cerro de Caspala, 3000 m, *Venturi 8613* (LIL, SI); ± 22 km de Humahuaca hacia Palca de



Asparzo, ± 3900 m, *J. H. Hunziker et al. 10413* (SI); Mina Aguilar, ladera, 4500 m, *Frangi & Kiesling 37* (LP), veta 4500 m, *Barbara Ruthsatz VI.31*, entre molino y veta, same (19) 1, toma de agua de molino, same (57) 16 (all PEDERSEN), ca. 4 km al N del molino de mina Aguilar, 4000 m, *J. H. Hunziker et al. 10561* (SI); Tres Cruces, *Soriano 660* (SI), *Fabris & Marchionni 1753* (PEDERSEN); camino Tres Cruces a Mina Aguilar, 4050 m, *Barbara Ruthsatz (71) 17* (PEDERSEN). Dep. Rinconada : Mina Pirquitas, al S de la mina, ± 4500 m, *Helga Schwabe et al. 804, 835* (LP). Dep. Santa Catalina : entre Timón Cruz y mina San José, 3600 m, *F. Claren ex herb. Kurtz 11585 p.p.* (BAF); NB! specimens from this collection in other herbaria are var. *conwayi*. Dep. Tumbaya : camino al Abra del Lipán, 3900 m, *Cabrera et al. 30554* (SI); Abra de Lipán, 4200 m, *Cabrera et al. 31710* (SI); Abra de Pives, 3900 m, *Cabrera 18533* (LP), cumbre, 4050 m, *Sleumer 3200* (LIL); El Quemado, ruta 52, 4100 m, *Nicora et al. s.n.* (PEDERSEN). Dep. Valle Grande : Santa Ana, *Burkart & Troncoso p.p. (SI-11770)*. Dep. Yaví : Abra de Lizoite, 4450 m, *Fabris & Zuloaga 7753* (LP), *Barbara Ruthsatz VIII.76* (PEDERSEN); cerro Cajas, 4300 m, *Sleumer 365* (LIL); Quebrada de Cajas, cerros, 4000 m, *Cabrera 7843* (LP). — Prov. Salta, dep. Cachi : Cuesta del Obispo, 3720 m, *Garolera & Romero (LIL-186915)*. Dep. Cafayate : loc.?, *Rodríguez 1322* (LIL, M); Cuesta de Arca, *C. Spegazzini s.n.* (LPS); La Laguna, leg.? (*LIL-12506*). Dep. Caldera : Los Potreros, *Lorentz & Hieronymus 188* (BA, K); Quebrada del río Potrero, Castillo, 3800 m, *Sleumer 2999* (LIL). Dep. La Viña, loc.?, *C. Spegazzini 147* (LP). Dep. Rosario de Lerma : Umgebung des Nevado del Castillo, 10-15.000', *Lorentz & Hieronymus 29* (CORD, GOET). Dep. Santa Victoria : camino Abra de Lizoite a Santa Victoria, 3800 m. *Cabrera & Kiesling 25093* (LP). — Prov. Tucumán : loc.?, *C. Spegazzini s.n.* (LPS). Dep. Chicligasta : ea. Santa Rosa, pto. La Cueva, 4000 m, *Venturi 3177* (LIL, M, SI), 4797 (BA, LIL, SI). Dep. Río Chico? entre El Molle y Las Lagunas, *Castellanos (BA-14678)*. Dep. Tafi : loc.?, *Castillon 484a* (LIL); camino a Amaichá, *Morello et al. (LIL-505163)*; Colalao del Valle, cumbre del Cajón, 3900 m, *Schreiter 5493, 5494* (LIL); sierra del Cajón, Los Chuscus, 4000 m, *Venturi 4513* (LIL); cumbres Calchaquíes, 4200 m, *Lillo 5527 p.p.* (LIL), 5537 (M); Cumbres Calchaquíes, Alazán, *Castillon 2510* (LIL), *Sparre 8577* (LIL); filo al NW de Quebr., Alazán, *S. Halloy 595* (LIL); co. Bayo, alrededores del refugio, 26°43' S-65°42' W, 4200 m, *Gómez Sosa & Mulgura 162, 197* (SI); Cumbres Calchaquíes, Abierto de Lara, 4000 m, *Baer s.n. p.p.* (BA, BAF, LIL, LP, S, SI); Quebrada del Matadero, 4200 m, *E. de la Sota 2718* (LP); cumbre de Chaquivil, *D. Olea 234 p.p.* (BAB); NB : other specimens from this collection are var. *genuina*; Ilcopot(?), *Castillon 2538* (LIL); Infiernillo, *Castillon (LIL-12791)*, *C. L. Cristóbal 126 p.p.* (LIL), *Krapovickas et al. 21861* (CTES), *O'Donnell 4603 p.p.* (LIL), *A. G. Schulz 6657* (CTES), *Sparre 5982 p.p.* (LIL), Infiernillo, "La Eugenia", *Castillon 3175* (LIL); Infiernillo a cumbres de Amaichá, 3000-3500 m, *Schreiter (LIL-12781)*; Lara, *Rodríguez 290* (LIL, M); cerro Muñoz, Ciénaga Grande 3400 m, *Lillo 2976 p.p.* (LIL), 4000 m, 4239, 3900 m, 7394 (LIL, M), *Castillon 786a, 787a* (LIL), cerro Muñoz, Puesto Viejo, *Fabris 1531*; cerro Negrito 4000 m, *Sparre 6046* (LIL); Quebrada del Barón, 3300 m, *Fabris 1399* (LP), 3700 m, *Turpe 325* (LIL); La Puerta, camino de San José a Las Lagunas, 3800 m, *Olea (LIL-12789)*; Peñas Azules a río de la Puerta, 3600-3800 m, *Schreiter 7029* (LIL, M); Real del Derrumbado 3800 m, *Schreiter 4202* (LIL, M); Real de los Ojos de Agua, *Schreiter (LIL-94664)*; San José, senda del medio a La Queñoa, *Schreiter 6964* (LIL). Dep. Trancas : Las Burras (Abra de Barburín) *Cuezzo & Legname 2184* (LIL); cumbre alto del Chorro 4000 m, *Schreiter 395* (LIL, M).

#### 4b. *G. meyeniana* var. *caulescens* Holz.

Mitteil. Bot. Staatssamml. München 2 : 229 (1956).

This variety is very easily recognized because of its leafy and stiffly upright (to judge from herbarium specimens) flowering shoots, and the material seen is remarkably uniform. The cauline leaves are mostly alternate, sometimes opposite, mostly acute or acutish, frequently somewhat crispulous in the margin. Tepals densely brownish-woolly on the back, apex of filaments distinctly 3-lobed. It seems to be confined to the region of El Volcán in the department to Tumbaya of the Argentine province of Jujuy; in all, I have seen 14 collections of it : *Castillon 6657* (M, type), *Cabrera et al. 12946, 16950, 18259, 21730* (LP), *Castillon 136,*



9220 (LIL), same *s.n.* (LIL-12801), *Fabris et al.* 6142, 6180 (LP), *Kiesling et al.* 900 (SI), *Schreiter* 292 (BA), 2569 (LIL), and *Venturi* 4970 (BA, BAB, LIL, LP, SI).

4c. *G. meyeniana* var. *conwayi* (Rusby) Suesseng.

Feddes Repert. 35 : 314 (1934).

— *Gomphrena conwayi* RUSBY, Bull. New York Bot. Gard. 8 : 89 (1912).

*G. conwayi* was described from Southern Perú, and reduced to varietal rank by SUESSENGUTH; as was the case with his var. *acaulis* (= var. *genuina*), discussed below, his concepts of this taxon and its limits seem to have been far from clear. I have not seen the actual holotype, but the duplicates of it seen are so homogenous, that I believe myself justified in basing my opinion on them. The leaves are elliptic or narrowly elliptic, rarely, if ever, broadly spatulate as in the var. *meyeniana*, but the most stable character seems to be the woolly perianth; possibly, it may have a slightly better claim to varietal status than the var. *genuina*.

MATERIAL SEEN. — PERU, dep. Puno : near Juliaca 12.5.1902, 12500 ft., *R. S. Williams* 2519 (Type, K). — “Andes of Cajamarca”, *William Lobb s.n.* (BM), locality more than doubtful. — Dep. Puno, prov. Lampa : Lampa, *Rauh & Hirsch* P648 (HEID). — Dep. Cuzco, prov. Espinar : Hacienda Lurucuchi, alt. 3950 m, *Vargas C.* 10552 (LIL). — Dep. Puno, prov. Melcar : Chuquibambilla, *Pennell* 13352 (K). Collacache, “*comm. Col. R. J. Stordy*” (K). Prov. San Román : Juliaca, altitude 12000-13000 ft., *Stafford* 248 (K). Prov. Puno : Pampa de Vilque at km 30 on Puno road ca. 3 km SE of Vilque, alt. ca. 3700 m, *H. H. et C. M. Iltis, D. et V. Ugent* 1357 (K). — Department? : between Puno and Lake Salinas, *Christopher Sandemann* 3882 *p.p.* (K). — BOLIVIA, dep. Oruro, prov. Cercado : Hacienda Huanocoma prope Eucalyptus, *Hammerlund* 96 (S). — “Andes S. Chile”, *Mr. Lobb s.n.* (K), locality more than doubtful!. — ARGENTINE, prov. Jujuy, dep. Humahuaca : abra entre Iturbe e Uruya, 4000 m, *Barbara Ruthsatz* (314) 17 (PEDERSEN); Mina Aguilar, 4000 m, *Cabrera et al.* 18967 (LP), *Barbara Ruthsatz* (54) 13; camino Tres Cruces a Mina Aguilar, same (70) 15 (both PEDERSEN). Dep. Cochino, Tres Cruces, sobre el cerro, *Soriano* 660 (BAB). Dep. Tilcara, cerro al E de Huacalera 3700 m, *Werner* 3918 (BAA). Dep. Valle Grande, Santa Ana, praderas, *Burkart & Troncoso* (SI-11682), 11770 : material mixed with var. *meyeniana* and *genuina*, on the whole doubtful). — Prov. Salta, dep. La Viña? : sierras entre La Viña y Amblayo, *Castellanos* (BAB-46717). Dep. San Carlos : Amblayo, *A. T. Hunziker* 2526 (SI). Dep. Santa Victoria : camino a Santa Victoria, curva del Diablo, 3500 m, *E. de la Sota* 4133 (LP). — Prov. Tucumán, Dep. Tafí : ciénaga en el camino a Tafí al concluir la cresta, 2600 m, *Lillo* (LIL-12518, M); further collections from that region : *Sparre* 5982 *p.p.* (LIL), *Krapovickas et al.* 21860 (CTES), *Lillo* 2976 *p.p.* (LIL), *Descole* 1907 (LIL), *Castillon* 461, 484a *p.p.*, 3231 (LIL, M).

4d. *G. meyeniana* var. *flaccida* Pedersen, var. nov.

*A varietatibus meyeniana, acaule et conwayi recedit ramis annuis florigeris foliosis, a var. caulescente habitu flaccido, decumbente; ut in hac filamenta apice manifeste trilobulata sunt tepalaeque plerumque lana oblecta.*

TYPUS : *A. L. Cabrera et al.* 31577, Argentina, prov. Jujuy, dep. Tilcara : Quebrada de Guasamayo, 2600-2800 m, 13.2.1980 (holo-, SI).

This variety is extremely close to the var. *caulescens*, and were the material referred to the latter not so remarkably homogeneous, I should without hesitation have included it here,



about the only difference being the weak, decumbent flowering shoots. The cauline leaves are frequently opposite, less frequently so in the var. *caulescens*, but in both varieties opposite and alternate leaves occur.

FURTHER MATERIAL SEEN. — PERU, dep. Puno : Canjata, peninsula Lake Titicaca, *Tutin* 963 (BM). Prov. Huancane : 1 km from Huancane on road to Juliaca, 15°12' S-69°42' W, *Hawkes, Hjerting, Cribb & Huaman* 4122 (C). — BOLIVIA, dep. Cochabamba, prov. Carrasco : cerro Sipascoya bei Pojo, ca. 3800 m, *Herzog* 2059a (L). — Dep. Tarija, loc. ?, "in saxosis 2200 m", *K. Fiebrig* (SI). Prov. Méndez : Izcayachi, 3100 m, *Fiebrig* 3202 (M); Izcayachi, 3500 m, und Puna Patanca, 3900 m, *Fiebrig* 3029 (L, LIL, M, SI). — ARGENTINE, prov. Jujuy, dep. Cochinoca : cerro Bayo 22°42' S-65°55' W, Pastor Arenas, *Giberti & Martínez s.n.* (BACF); lago Tres Cruces, *Fritz Claren, ex herb. Kurtz* 11666 (S); Tres Cruces, alrededores, 3700 m, *Fabris & Marchionni* 1783 (LP). Dep. Humahuaca : Chucualesna FCCN, 2800 m, *Castellanos* (BA-32356, 32427); Esquinas Blancas, *Castellanos* 35 (BA-32380), *Cabrera et al.* 27428 (SI); de Iturbe a Chaupí Rodeo, 3500-4000 m, *R. Kiesling et al.* 3502 (SI); Laguna Blanca x Tres Cruces, *Castellanos* (BA-32354); Mina Aguilar, 4000 m, *Cabrera et al.* 19013, 20673 (LP); Mina Aguilar, arriba del molino, altitud ca. 4200 m, *Sleumer* 3416 (LIL); arroyo Padrioc, El Aguilar 3800 m, *Jorge Fernández* (BAA-4728); de Pucará a Palca de Asparzo, ca. 3500 m, *Kiesling* 3502 (SI), 3500-4000 m, same 3516 (SI). Dep. Rinconada : Mina Pirquitas, 4300 m, *Helga Schwabe et al.* 939 (LP). Dep. Rinconada/Yavi : entre Ciénaga Grande y Cerrillos, *Castellanos* (BA-20058); Rinconada, 4000 m, cerros, *Cabrera* 7765 (LP). Dep. Santa Catalina : Sta. Catalina, *F. Claren ex herb. Kurtz* 11461 (S); Mina Perdida, ca. 4100 m, same 11505 (BAF, S). Dep. Tilcara : Alfarcito, 3000 m, *Cabrera* 13142 (LP); Huacalera, terrazas en la ladera E, 2800 m, *Cabrera* 12033 (LP); al E de Huacalera, 2350 m, *Werner* 352 (BAA); cerro(s) al E de Huacalera, 3600-3900 m, *Werner* 391A, 430A, 430B, 448 (BAA); Maimará-Laguna Colorada, 4000 m, *Budín* 20 (LIL, M); al E de Maimará, sierra de Zenta, *Budín* (BA-31/154); same place and collector (SI-15029); Pampa Corral, 3800 m, *Fabris et al.* 6359 (LP); Quebrada de Guasamayo, 2600-2800 m, *Cabrera et al.* 31577 (SI); sierras de Tilcara, altitud 3000 m, *Cristóbal & Türpe* 40 (LIL); Tilcara, cerro Negro, altitud ca. 3200 m, *Sleumer* 3341 (LIL). Dep. Tumbaya, cerro del Molino, *M. Medinaceli s.n.* (BAF); cerro de Molle Punco, *Medinaceli s. n.* (BAF); Purmamarca, Tascal, 3400 m, *Cabrera* 15133 (LP); camino de Purmamarca al Abra de Lipán, ca. 3300 m, *Kiesling et al.* 5191 (SI); subida de Purmamarca a Abra de Pives, 3700 m, *Cabrera et al.* 26394, 26397 (LP); Quebrada Grande de Tumbaya, 2500 m, *Kiesling et al.* 3435 (SI). Dep. Yavi : La Quiaca, altitud 3450 m, *T. Meyer* (LIL-33723, 34137), *A. Soriano* 516 (SI), 616 (BAB); La Quiaca-Villarón, altitud 3442 m, *Schreiter* 10855 (LIL); abra de Lizoite, *B. Ruthsatz* (350)5 (herb. PEDERSEN); Quebrada de Cajas, *Cabrera et al.* 21534 (LP); Quebr. cerro Negro, altitud 3600 m, *T. Meyer s.n.* (LIL); Abra de Yavi, 3400 m, *Cabrera et al.* 15298 (LP).

While the majority of the material belonging to this var. has all the tepals densely hairy, a few specimens from the Argentine prov. Jujuy and Southern Bolivia have completely glabrous tepals. These can be segregated as :

4d'. *G. meyeniana* var. *flaccida* fa. *levitepala* Pedersen, *fa. nov.*

A *G. meyeniana* var. *flaccida* fa. *flaccida* *differt tepalis omnino glabris.*

TYPUS : *A. L. Cabrera & R. Kiesling* 25164, Argentine, Prov. Jujuy, dep. Yavi : subida al pie del Abra de Lizoite, 4000 m, 19.4.1974 (holo-, LP).

FURTHER MATERIAL SEEN. — ARGENTINE, Prov. Jujuy, dep. Yavi : Chocoite, *Cabrera et al.* 21547 *p.p.* (LP, mixed with var. *conwayi*). Dept. Tumbaya : Tascal, 3400 m, *Cabrera et al.* 15133 *p.p.* (LP, mixed with fa. *flaccida*). — Prov. Salta, dep. Poma : Quebrada de Cobres, 3500 m, *Cabrera* 8729 (LP).



4e. *G. meyeniana* var. *genuina* Stuchl.

Beih. z. Bot. Centralbl. 30 (2. Abteil.) : 406 (1913), *nomen*; Feddes Reper. 12 : 345 (Aug. 1913).

— *Gomphrena acaulis* RÉMY, Ann. Sc. Nat. Bot., ser. 3, 6 : 350 (1846).

— *Gomphrena meyeniana* var. *albiflora* STUHL., Beih. z. Bot. Centralbl. 30 (2. Abteil.) : 406 (1913), *nomen*; Feddes Reper. 12 : 521 (Dec. 1913).

— *Gomphrena meyeniana* var. *acaulis* (REMY) SUESSENG., Feddes Reper. 35 : 313 (1934).

*Gomphrena meyeniana* var. *genuina* is not based on the type of the species, but on two collections from Bolivia, *d'Orbigny* (P), and *Mandon* (BM, P), both cited without number. The only D'ORBIGNY specimen of this species in P seems to be no. 1479; this is also the type of *Gomphrena acaulis* Remy. There are two MANDON collections in P, no. 983, similar to *d'Orbigny* 1479, and 1017, also represented in BM and G; this collection is a mixture of var. *meyeniana* and *conwayi*. To avoid the problems of a mixed type collection, I shall choose the D'ORBIGNY specimen in P as the lectotype of *Gomphrena meyeniana* var. *genuina* Stuchl., which so becomes identical with *G. acaulis*. Although STUHLÍK describes his variety as "die ursprüngliche typische", the fact that he does not cite the type specimen of the species in the protologue, in addition basing a different variety in part on that very specimen, makes Art. 26.1 of the Code inapplicable in this case, notwithstanding the possible intentions of the author, and obliges us to use the name *genuina* at varietal level instead of SUESSENGUTH's later var. *acaulis*.

An inspection of the type specimen of *Gomphrena acaulis* = *G. meyeniana* var. *genuina* showed that the two inner tepals of the flower are hairy, and this is about the only reliable difference I could find. The leaves are usually narrower, but as mentioned above, leaf-shape is too variable within this species to be of much use as a distinctive character. Already MOQUINTANDON (1849), who recognized *Gomphrena acaulis*, while listing *G. meyeniana* among the species not sufficiently known, suspected from the descriptions that the two were identical, and later STUHLÍK (1913a) united both under *G. meyeniana*, which he divided into three varieties. SUESSENGUTH (1934), while agreeing with STUHLÍK that *G. acaulis* did not merit status as species, apparently found sufficient differences between the two to separate *G. acaulis* as a variety of *G. meyeniana*, though from his arguments, and from his determinations of various specimens in the herbaria seen, he seems to have had somewhat hazy ideas about the nature of these differences. The varieties proposed by STUHLÍK he disregarded altogether. His treatment was followed by his pupil Elisabeth HOLZHAMMER (1955, 56), who scarcely improved her master's work.

Though the slight differences between *G. meyeniana* and its variety *genuina* (= *G. acaulis*) are scarcely sufficient to justify segregation at varietal level, I let it remain as such in order not to complicate the nomenclature more than necessary.

*Gomphrena meyeniana* var. *albiflora* was described from a Bolivian collection, *Buchtien s.n.* (M, PR). Of this I have seen the specimen in M, with STUHLÍK's annotation; it is no different from *d'Orbigny* 1479.

MATERIAL SEEN. — BOLIVIA, dep. Potosí : "coteaux des Mont : es de las Lagunas de Potosi. Petite plante à fleurs blanches étalée par la terre. Rare" A. *d'Orbigny* Phan. 1479 (P, *Gomphrena acaulis* scrips. Jules RÉMY, holotype of *Gomphrena acaulis* Rémy, lectotype of *Gomphrena meyeniana* var. *genuina*



Stuehl.). — PERU, dep. Puno (?) : between Puno and Lake Salinas, 14500 ft., *Christopher Sandeman* 3882 (K); dep. & prov. Puno, cerro El Calvario, *Acevedo* 146 (LIL). Prov. Carabaya, pampa de Lacxka, alt. 4360 m, *Vargas* C7121 (LIL). — BOLIVIA, loc.?, *Mandon* 983 (P). — Dep. & Prov.?: Cordillera de Sombreros, 3200 m, *Troll* 734 (M). — Dep. La Paz, prov.?: Altiplanicie, 4100 m, *Buchtien* 1481 (L, M, S). Prov. Pacajes : Rio Mauri/General Campero, 3900 m, *W. Forster s.n.* (M). Prov. Murillo : Chugiaguillo prope La Paz, 3700 m, *Hauthal* 378 (GOET), Talca Chugiaguillo, *Miguel Bang* 812 p.p. (E). Prov. Ingavi, granja de Cordepas en Huacullani 3950 m, *Beck* 333 (PEDERSEN); Pampahuasi 3900 m, *Barbara Ruthsatz* 526 (PEDERSEN); prov. Omasuyos, Velagne, a la altura de Pucarani, en la ruta La Paz-Huarina, *Krapovickas* 7081 (LIL). — ARGENTINE, Prov. Jujuy, dep. Tilcara : Quebrada de Ventura, 3800 m, *Cabrera & Hernández* 13995 (LP : in many flowers a few hairs on the covered side of the inner abaxial tepal). Dep. Yaví : Abra de Cajas, *Cabrera et al.* 17574 (LP). — Prov. Tucumán, dep. Río Chico, quebrada del río Chilimayo, leg. ? no. 2653 (*LIL-535403*). Dep. Tafí, cumbres Calchaquíes, *Lillo* 5527 p.p. (*LIL-12517 p.p.*); cumbre de Chaquinil, *Olea* 234 (LIL); Lara, *Rodríguez* 290 p.p. (BA); cumbre de Mala-Mala, 3400 m, *Lillo* 3435 (LIL); río Infiernillo, 2600 m, *Lillo* 1271 (M); Infiernillo, *O'Donell* 4603 p.p. (LIL), *E. de la Sota* 231 (LIL), *Krapovickas & Cristóbal* 20513 (CTES); km 82 subida a Vaca Parada al N de Tafí del Valle, 3800 m, *Diers* 274 (SI). Dep. Trancas : cumbres Calchaquíes, entre dos peñas, *Venturi* 4512 (LIL).

4f. ***G. meyeniana*** var. ***tucumanensis*** Pedersen, var. nov.

*Rami floriferi decumbentes, plerumque foliosi, interdum ramosi. Tepala glabra vel interiora duo lanosa, interdum omnia lana oblecta, filamenta staminorum apice haud lobata.*

TYPUS : *P. G. Lorentz & G. Hieronymus* 567, Argentine, Province of Tucumán, dep. Trancas : sierra de Tucumán, La Ciénaga, 10-17.1.1874 (holo-, GOET; iso-, CORD).

This admittedly rather weakly defined variety comprises a number of specimens of very similar aspect, which I have been unable to accommodate in any of the other varieties recognized here. The most striking character are the branching flowering shoots; unfortunately this can only be observed in a limited number of specimens, but nearly always a pair of stalked leaves are found a little below the involucre of the inflorescence. The indument of the tepals varies considerably, but I do not feel tempted to subdivide this var. further; however, it seems to set it apart from the var. *caulescens* and *flaccida*; also, the filaments are not lobed at apex. The var. is found in the mountains of the Argentine Province of Tucumán and adjacent Catamarca, also in the mountains of Calilegua in the Province of Jujuy, regions floristically similar, which supports the hypothesis that the material referred here is truly related.

FURTHER MATERIAL SEEN. — ARGENTINE, Prov. Catamarca, dep. Andalgalá : loc.?, *Sanzin* 2680 (BA); Cuesta de Mina Capillitas, 3100 m, *Cabrera et al.* 24752 (LP); La Hoyada (Ollada), 3100 m, *P. Jörgensen* 1106 (LIL p.p., M). — Prov. Jujuy, dep. Valle Grande : Serranía de Calilegua, Cerro Amarillo, 3300 m, *Fabris s.n.* (LP); Cerro Hermoso, *Fabris* 5357, 5400, 5812 (LP). — Prov. Tucumán, dep. Chicligasta : entre La Cascada y Las Cuevas, alt. 3000 m, *T. Meyer* 14953 (LIL). Dep. Tafí : Río Infiernillo, alt. 2600 m, *Lillo* (*LIL-12519*); El Infiernillo, alt. 3042 m, *O'Donell & Meyer* 5286 (LIL); cerro Muñoz, Ciénaga Grande, alt. 3400 m, *Lillo* 2976 (LIL).

5. ***Gomphrena pallida*** (Suesseng.) Pedersen

*Darwiniana* 20 : 282 (1976).

A very distinct specimen of this species, not readily recognized as belonging here, is better considered a distinct variety :



**G. pallida** subsp. **pallida** var. **diffusa** Pedersen, var. nov.

A var. *pallida* recedit habitu diffuso, floribus minoribus, bracteolis quam tepalis minoribus : haec integra, glabra, ad 4.5 mm longa, oblonga, acuta ; filamenta fere ad insertionem antherarum connata, bifida, lobulus antherifer nullus, laterales apicem antherae vix attingentes. Ceterum ut in var. *pallida*.

TYPUS (Specimen unicum adhuc notum) : A. Schinini, C. Quarín, M. M. Arbo & S. M. Pire 10114, Argentine, Prov. Jujuy, dep. Capital : Cuesta de Yala, inter rupes 2.11.1974 (holo-, CTES).

6. **Gomphrena paranensis** R. E. Fries

Ark. Bot. 16 (12) : 36 (1920).

This species was described from the Southern Brazilian state of Paraná, and has later been found in the neighbouring state of São Paulo (SIQUEIRA, 1980). A very closely related plant grows in Central Paraguay :

**G. paranensis** subsp. **paraguariensis** Pedersen, subsp. nov.

*Herba certe perennis, erecta, ad 70 cm vel ultra alta, foliis basalibus rosulatis, caulinis valde reductis vel nullis.*

*Radix palaris plus minusve 1 cm crassus. Caulis florifer 0.2-0.3 cm crassus, teres, pilis simplicibus antrorsis appressis spisse obtectus. Folia basalia sessilia, 3-6 cm longa, 1.3-2 cm lata, anguste obovata oblanceolatae, plerumque obtusa, aliquot tamen acutiuscula, supra pilis hyalinis ferruginiis patentibus, subtus densius pilis mollibus albidis vestita ; caulina vix centimetralia, linearia, acuta. Flores in spicastris globosis ad 15 mm diametro, terminalibus exillaribusque, sessilibus aut ad 50 mm longe pedunculatis, bracteis coriaceis tomentellis 3-4 mm longis suffultis, in spicis compositis 2-3-articulatis dispositis : bractea floris chartacea, plus minusve 3 mm longa, ovata, acuta, mucronata, glabra vel tomentella ; bracteolae scariosae, large 4 mm longae, ovatae, acutae, apiculatae, valde concavae, ecristatae, glabrae vel sursum puberulae ; tepala sub-cartilaginea, 5.8-6 mm longa, linearia, acutissima, uninervia, dimidia pars eorum inferior lana obsecta ; stamina quam tepala manifeste longiora, ad 7.5 mm, antheris ca. 2.5 mm longis, filamenta inferne connata, partes liberae ad 1,25 mm longae, trifidae, lobulus antherifer diminutus, laterales oblongi, obtusi, apices antherarum haud attingentes ; germen ca. 0.7 mm longum, globoideum, stylo 0.5 mm longo cum stigmatate vix eo latiore bifido ca. 1.25 mm longo munitum. Fructus non vidi.*

A subsp. *paranensi* praecipue differt forma foliorum, bracteolis crista destitutis, et staminibus exsertis antheris majoribus munitis.

TYPUS : Pedersen 9539, Paraguay, dep. Paraguari, near Caapucú, 12.11.1969 (holo-, C ; iso-, herb. PEDERSEN).

Apart from the type collection, I have seen no other material of this plant. While clearly different from its Brazilian relative, it scarcely merits specific status, the most striking differences being the shape of the leaves, and the absence of a crest on the bractlets, but the importance of this latter character must not be over-emphasized ; FRIES, in his description of *Gomphrena paranensis* notes that the crest is very narrow, only visible with the aid of a good lens, and I myself have found that it varies in width from 0.4 mm to less than 0.1 mm and almost rudimentary. In other species of *Gomphrena* we may meet with forms with a well-developed crest, and others with no crest at all.



7. *Gomphrena pumila* Gill. ex Moq.

In DC., Prodr. 13 (2) : 400 (1849).

— *Gomphrena pygmaea* SUESSENG., Mitteil. Bot. Staatssamml. München 1 : 105 (1952).

*Gomphrena pygmaea* was described from three tiny flowering shoots in BM; the underground parts are missing, which led SUESSENGUTH to assume that the plant was annual. An inspection of the type (and only) collection, of which I was able to boil and dissect a flower, showed it to be identical with GILLIES' specimen in K of *Gomphrena pumila*, which came from the same area.

8. *Gomphrena virgata* Mart.

N. gen. sp. pl. Bras. 2 (1) : 16 (1826).

— *Gomphrena anti-lethargica* ALV. SILV., in PIO CORREA, Dicc. pl. uteis : 467 (1926); *Floralia montium* 2 : 41 (1931). "In campis in Norte de Minas, ubi sub nomine Cangussu branco cognita est; n. 727 in herbario Silveira... Specimen a Dr. Leo Gillet herbario Silveira offertum fuit".

A sheet in R is labelled "Herbarium Silveira / No. 727. / Amaranthaceae / *Gomphrena anti-lethargica* Alv. Silv. / Brasil — Minas Gerais / Vulgo / Ganguçu branco / Norte de Minas / Offert Dr. GILLOT 30-10-922.". — Partly lying loose on the sheet, partly contained in a large envelope, are a number of fragments showing widespread damage by insects, which almost certainly constitute the holotype. Despite its very poor condition, the material can be identified as *Gomphrena virgata*.

9. *Gomphrena vitellina* Pedersen, sp. nov. — Fig. 2.

*Herba humilis perennis caule sunterraneo ut videtur late repente ramoso haud radicante internodiis 1-2.5 cm longis, ad nodos cataphyllos squamiformes gerente, e quo rami supraterranei 3-5-nodi foliosi vix ramosi in spicastro pulcherrimas florum desinentes oriuntur.*

*Radix ignota. Caulis pars subterranea 0.25-0.4 cm crassa, teres, glabra, in sicco valde rugosa. Rami floriferi 0.15-0.2 cm crassi, teretes, albo-tomentosi. Folia subsessilia, 2-4 cm longa, 1-3 cm lata, rotundato-obovata vel inferiora potius spathulata, penninervia vel superiores plerumque 3-5-nervia, mucronata, utrinque pilis simplicibus articulatis 3-4 mm longis candidis hirsuta. Flores in spicastro terminalibus aut spurie axillaribus ad 40-110 mm longe pedunculatis, nudis, ad 25 mm latis colore et forma aspectu vitelli gallinacei glomerati: bractea bracteolaeque scariosae, luteae, hae ad 11 mm longae, ovatae, acutae, valde concavae, uninerviae, nervus in dorso valde prominens, scaber, sursum cristam minutulam denticulatam paene simulans, mucronatae, glaberrimae, cum periantho maturitate seminis deciduae, illae-5-6 mm longae, ovatae, acutae, uninerviae, mucronatae, glabrae, persistentes. Tepala diversa: tria exteriora ad 11.5 mm longa, 2 mm lata, angustissime oblonga, apice denticulata, trinervia, vix mucronata, dorso villosa; duo interiora ca. 10.5 mm longa, vix 1 mm lata, linearia, acuta integra, uninervia (sed rudimenta vix visibilia nervorum lateralium sub fundo plerumque adsunt), mucronata, ut exteriora villosa. Stamina ca. 13.5 mm longa antheris oblongis ad 3 mm longis annumeratis, filamenta ad 11 mm supra basin connata, libera pars eorum apice sinu lato brevissime bilobata, lobuli triangulares, acuti, antheris in sinu sessilibus multo breviores. Germen depresso pulviniforme, ca. 1 mm longum, 1.8 mm latum, cum stylo ad 0.8 mm longo et stigmate aliquot latiore bipartito ad 2.3 mm longo. Fructus non suppetit.*



TYPUS : *S. Ferrucci, R. Vanni & L. Ferraro 641*, Paraguay, dep. Amambay, near Cerro Muralla, 14.9.1988 (holo-, CTES; iso-, herb. PEDERSEN). — PARATYPUS : *F. Mereles 1473*, same locality (PY).

Although the Cerro Corá National Park, within which the type and only other specimen seen by me were collected, has been visited by many naturalists, this striking species seems to have escaped their notice. Because of its mainly three-nerved tepals, I would place it in the heterogenous and scarcely natural section *Gomphrena*, but within that section it is unique in presenting a vestigial crest on the bractlets.

10. ***Iresine diffusa*** Humb. & Bonpl. ex Willd.

*In* L., Sp. Pl., ed. IV, 4 (2) : 765 (1805).

***I. diffusa*** var. ***macrophylla*** (Griseb.) Pedersen, *comb. nov.*

- *Iresine celosioides* L. var. *macrophylla* GRISEB., *Plantae Lorentzianae* : 34 (1874); *Abhandl. Königl. Ges. Wiss. Göttingen* 19 : 82 (1874).
- *Iresine celosia* L. var. *nicotianoides* SUESSENG., *Feddes Repert.* 39 : 11 (1936), *e descr.*

Without attempting to unravel the variability of this widespread and polymorphous species, I believe myself justified in making this transfer. Nor have I any hesitation in synonymizing SUESSENGUTH's variety with GRISEBACH's.

11. ***Pfaffia eriophylla*** (Mart.) Pedersen, *comb. nov.*

- *Gomphrena eriophylla* MART., *Nova gen. sp. pl. Bras.* 2 (1) : 9, *tab. CIX* (1826).
- *Xeraea eriophylla* (MART.) O. KUNTZE, *Rev. Gen. Pl.* 2 : 545 (1891).

No doubt because of the deeply lobed stigma, MARTIUS placed this species in the genus *Gomphrena*, and this view has been accepted by all later authors : MOQUIN-TANDON (1849), who did not accept the genus *Pfaffia*, placed the species in *Gomphrena* sect. *Wadapus*, which, as conceived by him, includes nearly all the species referred to *Gomphrena* by most modern authors; SEUBERT (1875), who did not recognize *Pfaffia* either, referred the species to the section *Gomphrenula*, and here it has remained since. The genera *Gomphrena* and *Pfaffia* are very closely related; one of the best characters separating the two is the bifid stigma of *Gomphrena* vs. the shallowly lobed or scarcely emarginate stigma of *Pfaffia*; other good characters are the curious fimbriate filaments found in all species of *Pfaffia* with the exception of the sect. *Hebanthe* — to which I would be inclined to restore its generic rank — the mostly claviform ovary, with the ovule inserted near the apex, and the absence of a true style. In *Gomphrena*, the ovary is somewhat compressed-ovoid or -obovoid, and, at least when in fruit, there is always a distinct, even if short, style to be seen. Less characteristic is the seed, which in *Pfaffia* as a rule is elongated, with the funicle inserted well below the apex, while in *Gomphrena* the insertion of the funicle usually is apical, but unfortunately there are exceptions to this rule.



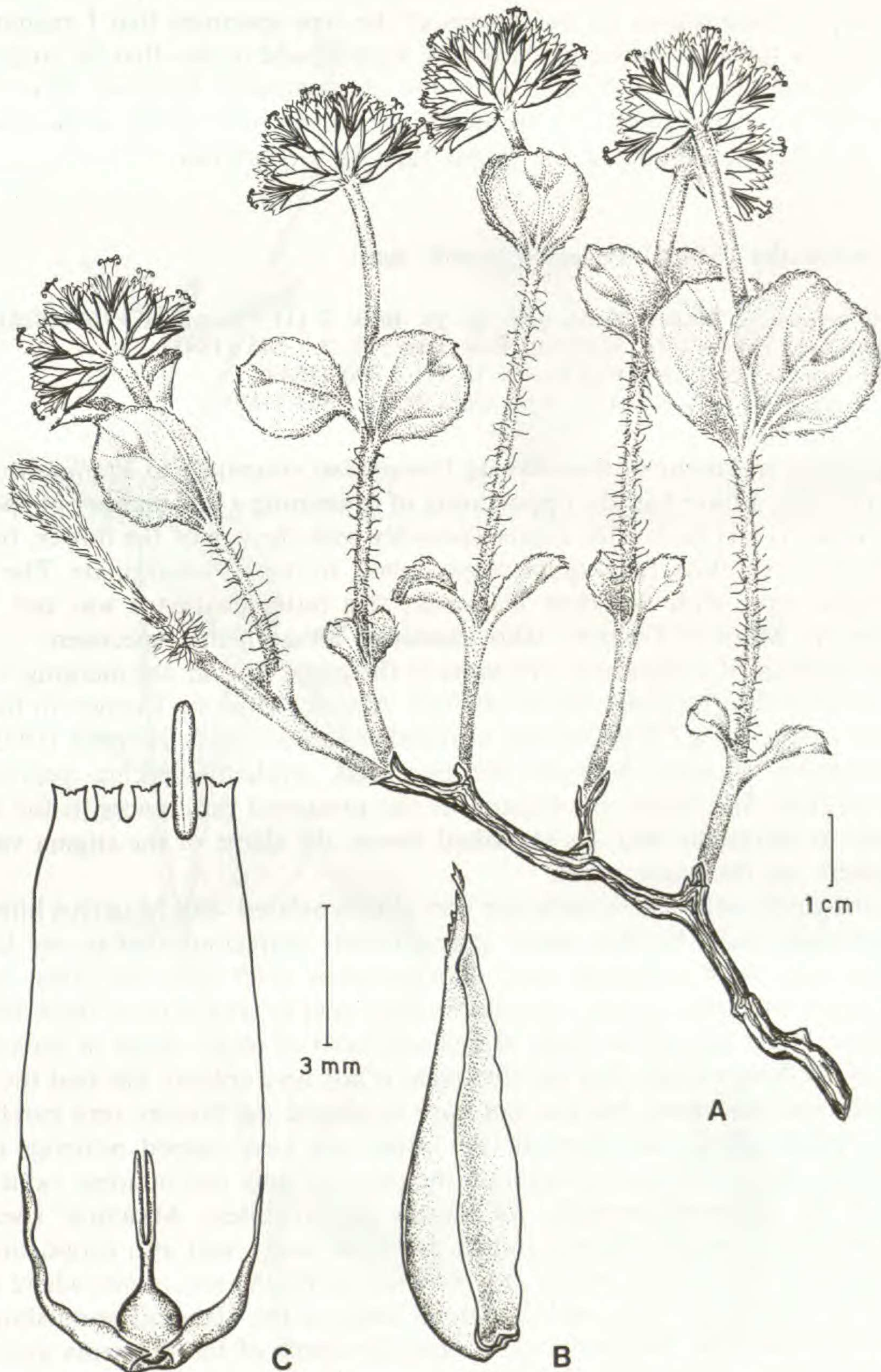


Fig. 2. — *Gomphrena vitellina* : A, habit ; B, bractlet, showing vestigial crest ; C, androecium (all anthers except one removed) and pistil.



The pistil of *Gomphrena eriophylla* has a slender, claviform ovary, with a sessile, though admittedly deeply lobed stigma (in the flowers of the type specimen that I examined, perhaps not quite so deeply lobed as shown on MARTIUS' figure); add to this that the androeceum is of the general *Pfaffia*-type, in particular with the characteristic fimbriate filaments, as also described by MARTIUS, and shown on his illustration, and I must arrive at the conclusion that the species is better accommodated in *Pfaffia* than in *Gomphrena*.

12. *Pfaffia sericantha* (Mart.) Pedersen, *comb. nov.*

- *Gomphrena sericantha* MART., Nova gen. sp. pl. Bras. 2 (1) : 8, tab. CVIII (1826).
- *Xeraea sericantha* (MART.) O. KUNTZE, Rev. Gen. Pl. 2 : 545 (1891).
- *Gomphrena cinerea* MOQ., in DC., Prodr. 13 (2) : 390 (1849).
- *Pfaffia cinerea* (MOQ.) O. KUNTZE, Rev. Gen. Pl. 2 : 543 (1891).

My arguments in favour of transferring *Gomphrena eriophylla* to *Pfaffia* also apply here. Apart from the type, I have had the opportunity of examining a fair number of specimens. The stigma is variable to a considerable degree (possibly with the age of the flower, though I have not been able to verify this), from quite deeply lobed, to merely emarginate. The androeceum is of the *Pfaffia* type, with fimbriate filaments; this latter character was not observed by MARTIUS, nor by MOQUIN-TANDON, who examined an authentic specimen.

With the transfer of *Gomphrena sericantha* to the genus *Pfaffia*, the merging of *Gomphrena* or *Pfaffia cinerea* with it becomes almost obvious. Already MOQUIN-TANDON in his description of *Gomphrena cinerea* says "*Gomphrenae sericanthae facies*", and STÜTZER (1935) comments on the remarkable likeness between the two, but, evidently taking previous authors' descriptions at their face value, on account of the presumed differences in the shape of the stigma refuses to merge the two. As remarked above, the shape of the stigma varies, even in different flowers on the same plant.

*Pfaffia eriophylla* and *P. sericantha* are very closely related, and MARTIUS himself doubted whether they could really be kept apart. It is certainly suspicious that to my knowledge *P. eriophylla* has only been collected once. HOLZHAMMER (1955-56), the latest to revise the American *Gomphrenae* as a whole, recognizes both species and retains them in that genus, separating them in her key on the basis of size and habit of plant, shape of leaves, and length of the stalk of the flower-heads, but her treatment is not very critical. She had the opportunity of seeing both type specimens, but can not have examined the flowers very carefully, or with the modern optical aid at her disposal, she could not have helped noticing the fimbriate filaments. Of the characters used to separate the two, the only one of some value seems to be the length of the inflorescence-stalk; the others are worthless. MARTIUS' specimen of *G.* [*Pfaffia*] *eriophylla* has smaller flowers (tepals 4-4.3 mm long), and also proportionally shorter bracts and bractlets than I have seen in any specimen of *Pfaffia sericantha*, where the length of the tepals varies from 5 to 7 mm, and the lateral lobes of the filaments seem shorter than the middle, antheriferous lobe, but in my experience the shape of the filaments may vary within this, and other species of the genus. I shall, however, provisionally keep the two apart, also on the strength of MARTIUS' field experience, in the hope that more material may appear.



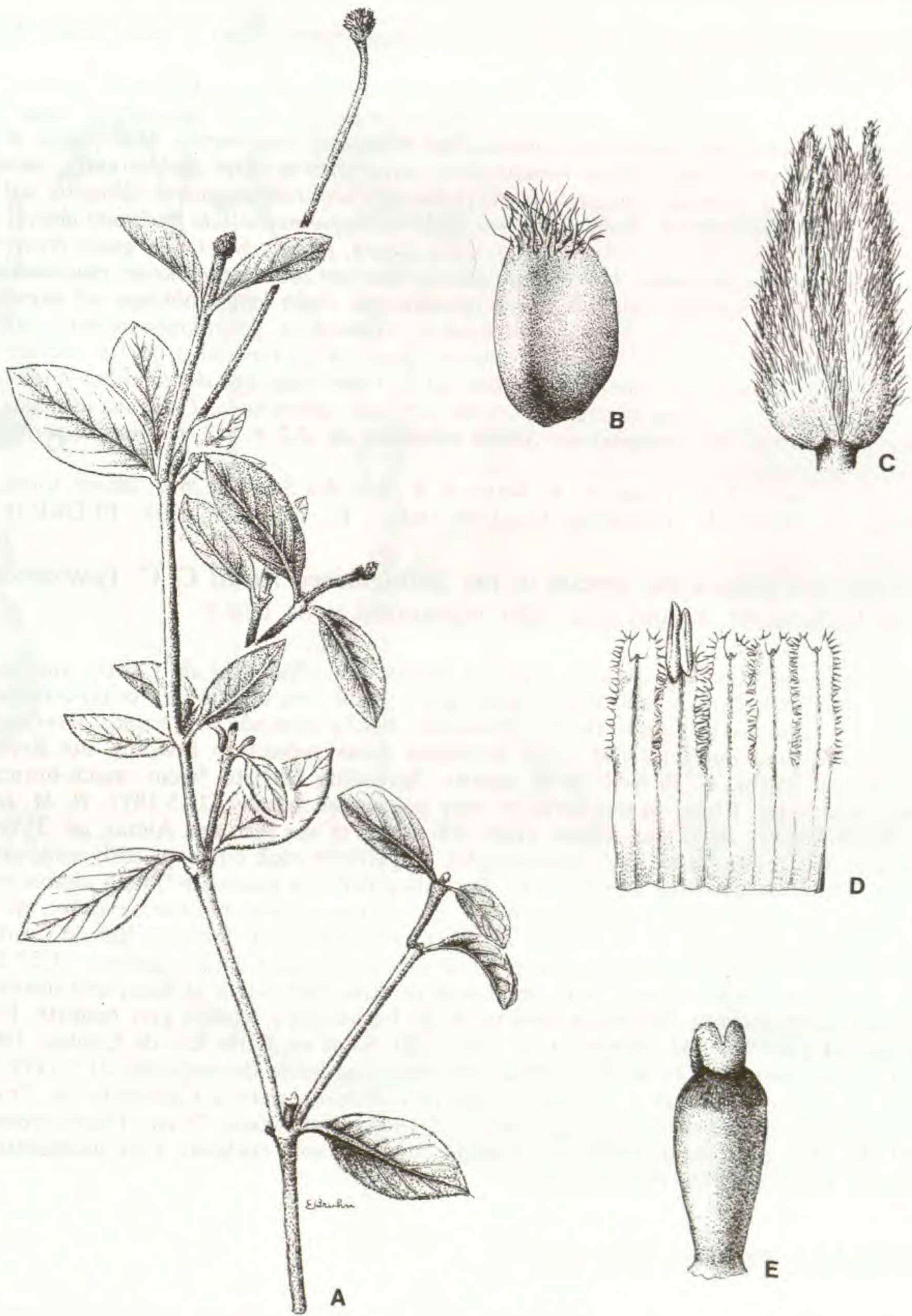


Fig. 3. — *Pfaffia townsendii* : A, habit  $\times 0.5$ ; B, bractlet  $\times 10$ ; C, flower after removal of bractlets  $\times 10$ ; D, androecium (all anthers except one removed)  $\times 15$ ; E, pistil  $\times 15$ . (Irwin et al. 12611).



13. *Pfaffia townsendii* Pedersen, *sp. nov.* — Fig. 3.

*Herba perennis (vel suffrutex?) decumbens valde ramosa ramis 70 cm et ultra longis. Nec radicem neque caudicem vidi, teste collectorum lignosi sunt.*

*Caulis annuus 0.2-0.5 cm crassus, teres, juventute griseo-albo tomentosus, aetate glabrescens. Folia sessilia aut brevissime — ad 0.3 cm — petiolata, 1.5-8 cm longa, 2.5-4.2 cm lata, ovata (saepe latissime), plerumque acuta vel acutiuscula, rarius apice obtusa, basi rotundata, penninervia, nervo medio in mucronem ad 1 mm longum excurrente, supra lanosa tomentellave, aetate plus minusve glabrescentia, subtus tomento albido densissime obtecta. Flores in spicastris densis primo capituliformibus, postea elongatis, sat longe (80-165 mm) pedunculatis agglomerati; flores inferiores deflorati atque maturitate fructuum dejecti multo ante apicales aperti sint. Bractea floris 2.5-3 mm longa, ovata, acuta, pilosa; bracteolae quam bractea longiores latioresque, perigonium amplexantes, late ovatae, acutiusculae aut breve acuminatae, mucronatae, glabrae. Tepala tenaciter scariosa margine tenuiora, paene aequalia, ca. 5 mm longa, oblonga vel anguste oblongo-ovata acuta acutiusculave, trinervia, dense appresso-pilosa. Stamina ca. 4 mm longa antheris ad 1 mm longis annumeratis, filamentorum tertia pars inferior connata, duae partes superiores liberae sursum angustatae apice trilobatae, lobulus antherifer minimus, laterales ad 0.15 mm longi, lineales lateribus fimbriati. Germen ca. 0.7 mm longum anguste oblongum stigmate sessile profunde emarginato. Utriculus ovoideus ad 2.6 mm longus stigmate persistente non annumerato. Semen ovoideum ca. 2.2 × 1.2 × 1 mm, superficie punctata.*

TYPUS : *H. S. Irwin, J. W. Grear jr., R. Souza & R. Reis dos Santos 12611, Brazil, Goiás, Chapada dos Veadeiros, ca. 20 km W. Veadeiros, 12.6.1966 (holo-, K; iso-, NY, herb, PEDERSEN).*

I dedicate this remarkable species to my distinguished friend C. C. TOWNSEND of Kew, with whom I discussed it, and who also recognized it as new.

FURTHER MATERIAL SEEN. — BRAZIL, State of Bahia, municipio Rio de Contas and neighbouring munic. : Serra do Rio de Contas, between 2.5 and 5 km S of the Vila do Rio de Contas on side road to W of the road to Livramento, leading to the Rio Brumado. Rocky riverside with rapids, riverine vegetation, cerrado with sandstone outcrops and some grassland areas subject to flooding but dry at time of collection. Alt. ca. 980 m, 13°36' S-41°50' W approx. Spreading herb to 50 cm, much-branching. Plant white-woolly-tomentose. Floral bracts white to very pale green basally, 28.3.1977, *R. M. Harley et al. 20086 (K, PEDERSEN)*. Serra das Almas, lower NE slopes of the Pico das Almas, ca. 25 km WNW of the Vila do Rio de Contas. Sandstone, metamorphic & quartzite rock outcrops with associated marsh & damp flushes. This plant growing among rocks. Spreading herb (or subshrub?) with almost woody stems near base. Stems much-branched, white-tomentose. Leaves rugose grey-tomentose above, white beneath. Flower heads white, 20.3.1977, *R. M. Harley 19753 (K, PEDERSEN)*. Serra do Rio de Contas, ca. 1 km south of small town of Mato Grosso on the road to Vila do Rio de Contas, approx. 13°29' S-41° W, alt. ca. 1200 m. Sandstone rock outcrops with small area of disturbed marsh at base, and nearby river with lush vegetation along margins. Spreading herb to 50 cm. Leaves grey, whitish grey beneath. Flower spikes whitish green, 24.3.1977, *R. M. Harley et al. 19923 (K)*. 4 km ao N de Rio de Contas, 1000 m de alt. Paralelo 13°32' S e meridiano 41°46' W. Campo rupestre, subarbusto decumbente, 21.7.1979, *S. A. Mori, R. M. King, T. S. dos Santos & J. J. Hage 12395 (K)*. Estrada para a Cachoeira do Fraga, no Rio Brumado, a 3 km do municipio de Rio de Contas, 22.7.1981. Subarbusto 70 cm. Flores creme, *A. Furlan et al. 1690 (K)*. Rio de Contas, arredores. Campo rupestre, solo rochoso. Flor alvescente, 15.5.1983, *G. Hatschbach 46420 (MBM, PEDERSEN)*.

QUATERNELLA Pedersen, *gen. nov.*

*Flores bracteati bracteolatique in spicastris capituliformibus dispositi, tetrameri; bractee bracteolaeque scariosae; tepala scariosa, libera, trinervia; staminum filamenta inferne connata, partes liberae fimbriatae apice trilobatae, antheris in lobulo medio insertis post anthesin dejectis, tum filamenta revoluta.*



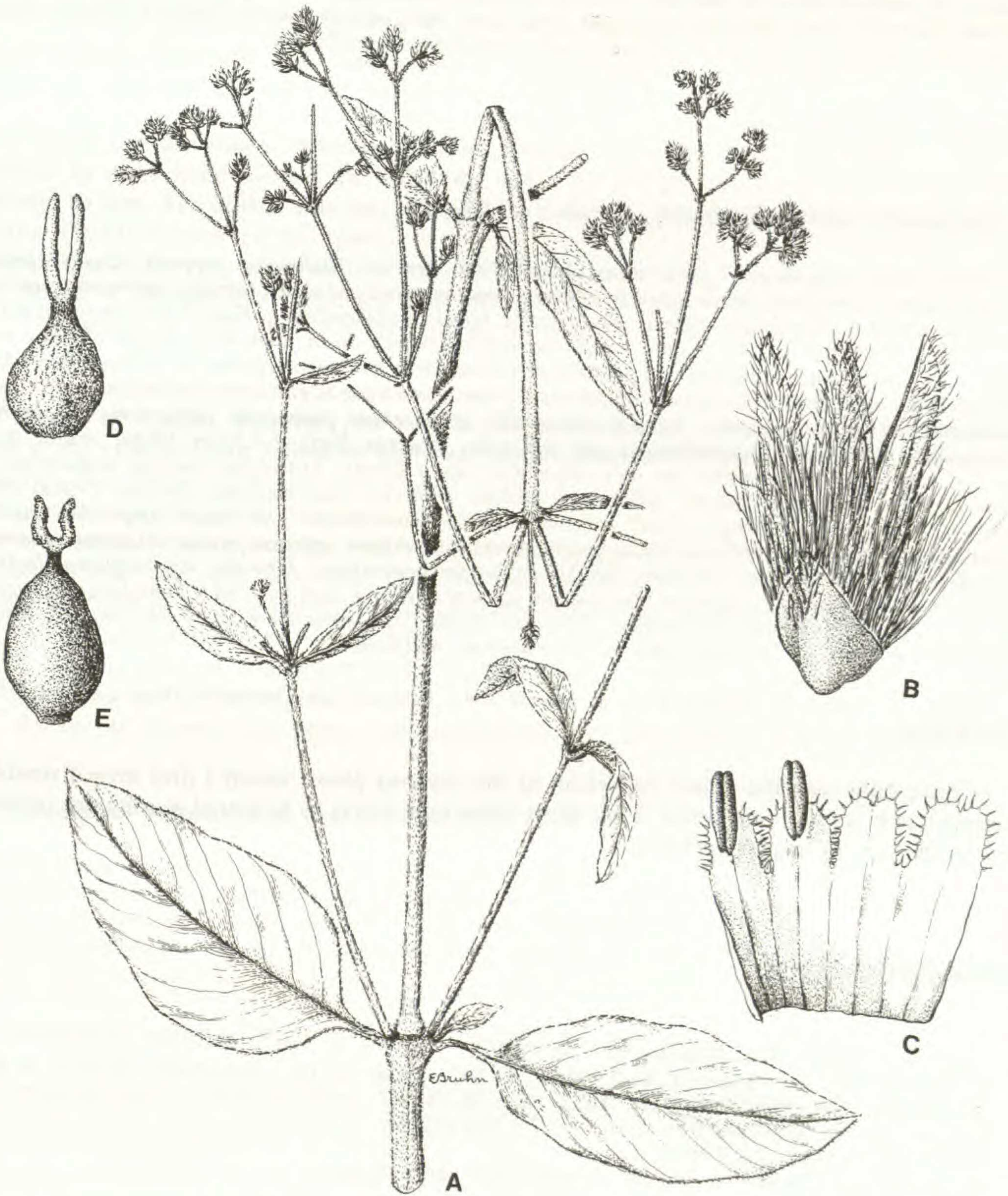


Fig. 4. — *Quaternella confusa* : A, habit  $\times 0.5$ ; B, flower within its bractlets  $\times 10$ ; C, androecium (2 anthers removed)  $\times 10$ ; D, pistil  $\times 20$ ; E, fruit  $\times 10$ . (Pabst et al. 8861).



*Germen ut in reliquis Gomphrenoideis ovulum unicum basifixum de funiculo longum pendens continens, stylo manifesto et stigmatate bipartito instructo. Fructus utriculus indehiscens. Semen pyriforme vel paene oblique reniforme, funiculus latere insertus, plerumque tertia parte infra apicem seminis. Embryo hippocretiformis cotyledonibus incumbentibus quam radícula paullo longioribus latioribusque.*

*Genus inter Gomphrenam et Pfaffiam positum : a Gomphrena recedit filamentis ciliatis et semine funiculo latere inserto, a Pfaffia pistillo stylo manifesto et stigmatate ad basin bipartito ramis filiformibus.*

*Species unica adhuc nota :*

#### 14. *Quaternella confusa* Pedersen, *sp. nov.* — Fig. 4.

*Frutex teste collectorum 1.5-2m altus characteribus generis. Radix non suppetit. Caulis (praeter inflorescentiam) 0.2-0.6 cm crassus, teres vel obscure quadrangularis, ad nodos tumidus, internodia superiora pilis simplicibus 0.5-1 mm longis crispulis dense vestita, inferiora glabrescentia. Folia 3-10-? cm longa petiolo 0.4-1.3 longo includente, 0.7-4.5 cm lata, ovata vel saepius oblongo-ovata, superiora anguste oblonga acuta obtusave, ad basin cuneata, penninervia 16-10 nervis secundariis sat prominentibus ab utroque latere nervi medii, utrinque molliter villosa. Spicastra globosa 4-8 mm diametro 0-10 mm longe pedunculata in dichasiis terminalibus ad quater-quinquies furcatis internodiis et imprimis pedunculis sub-sericeis, hypsophylla inflorescentiae compositae squamiformia aut sub-nulla. Bractea floris 1-1.3 mm longa, ovata, acuta, uninervis, haud mucronata, glabra aut raro aliquot pilos dorso gerens; bracteolae bractee aequilongae vel parum longiores, ovato-triangulares, subfalcatae, acutae, uninerves, mucronulatae, glabrae. Tepala subaequalia, 3-3.5 mm longa, oblonga, acuta, trinervia, mutica, pars inferior pilis longis simplicibus quartam partem infra apicem attingentibus oblecta, quattuor partes superiores appresse pilosae. Staminum filamenta ad medium connata, breviter trilobata, lobulus antherifer brevissimus, laterales vix longiores, laciniati. Germen ad 0.7 mm longum, compresse obovoideum, superne obtusum, cum stylo ad 0.2 mm longo et stigmatate bipartito 0.5 mm longo ramis filiformibus. Utriculus absque stylo persistente ca. 1 mm longus, ovoideus. Semen ca. 0.8 × 0.6 × 0.3 mm semi- vel asymmetricè reniforme.*

**TYPUS :** *G. Pabst, E. Pereira & A. P. Duarte 8861, Chapada de Contagem (holo-, R; iso-, herb. PEDERSEN).*

I have only seen the above collection of this curious plant, which I find myself unable to accomodate in any known genus. Very likely more material is to be found among the unnamed *Amaranthaceae* in many herbaria.

#### **XEROSIPHON** Turcz.

Bull. Soc. Imper. Nat. Moscou 15 : 55 (1843).

— *Gomphrena* sect. *Xerosiphon* (TURCZ.) MOQ., in DC., Prodr. 13 (2) : 416 (1849); SCHINZ, in ENGL. & PRANTL, Nat. Pflanzenfam. 2, Aufl., 16c : 80 (1934).

— *Xeraeae* spp. O. KUNTZE, Rev. Gen. Pl. 2 : 545 (1891).

— *Pfaffiae* sp. SCHINZ, l.c. (1934), p.p.

— *Froelichiae* spp. MEARS, in schedis nonnullis herb. Mus. Paris.

The genus *Xerosiphon* was described by TURCZANINOW with one species, based on a specimen collected by BLANCHET in the State of Bahia, Brazil. MOQUIN-TANDON (1849) found this specimen to be identical with *Gomphrena angustiflora* Mart. In accordance with his generally wide generic concept, and possibly influenced by MARTIUS' opinion of the systematic



position of the species, he merged TURCZANINOW's genus with *Gomphrena*, maintaining it as a section of that genus, at the same time describing a second species, originally proposed by POHL, who had named it on a label in W. This specimen is presumably now lost, but there is a duplicate in P. BENTHAM & HOOKER fil. (1883), who otherwise recognized many of the genera merged by MOQUIN-TANDON in *Gomphrena*, followed him, keeping *Xerosiphon* within the genus. Otto KUNTZE (1891) transferred both species to *Xeraea*, but this, as he himself states, was merely an automatic transfer without attempt to study their true affinity, necessary because he considered *Xeraea* the legitimate name for the genus *Gomphrena*. A third species referred to sect. *Xerosiphon* was described by R. E. FRIES; because of the shape of the stigma, SCHINZ (1934) transferred this species to *Pfaffia*, keeping the other two in *Gomphrena*, in spite of their obviously very close affinity with FRIES' species. Finally, on various annotation-slips, Dr. James A. MEARS has suggested that the section *Xerosiphon* belongs in *Froelichia*.

The more or less distinctly gamotepalous perianth sets *Xerosiphon* well apart from *Gomphrena*, where the tepals at most are united at base, as does also the shape of the stigma, which more approaches the type seen in *Pfaffia*; also the seed resembles the seed of that genus. No species of *Pfaffia*, however, has a distinctly gamotepalous perianth, nor does *Xerosiphon* possess the characteristic ciliate or fimbriate androeceum of *Pfaffia* (excl. *Hebanthe*), and the presence of a distinct style also sets it apart from that genus. To place *Xerosiphon* in *Froelichia* would result in that genus being encumbered by no less than three different kinds of stigma, and two types of androeceum, which would surely extend the limits of the genus beyond reason; about the only character the two genera have in common is the gamotepalous perianth, which in *Xerosiphon* in the fruiting stage develops something resembling the wings or teeth of the mature perianth of *Froelichia*. In view of its controversial systematic position, and of the combination of characters found nowhere else, I consider it logical and practical to recognize the genus *Xerosiphon*.

As far as known, the genus only comprises two very closely related species :

15. ***Xerosiphon angustiflorus*** (Mart.) Pedersen, *comb. nov.*

- *Gomphrena angustiflora* MART., Nova gen. sp. pl. Bras. 2 (1) : 19, tab. CXXI (1826).
- *Gomphrena martiusiana* STEUD., Nomenclator, ed. 2., 1 : 699 (1840); *nomen novum superfluum*.
- *Xerosiphon gracilis* TURCZ., Bull. Soc. Imp. Nat. Moscou 16 : 55 (1843).
- *Xeraea angustiflora* (MART.) O. KUNTZE, Rev. Gen. Pl. 2 : 545 (1891).

16. ***Xerosiphon aphyllus*** (Pohl ex Moq. ) Pedersen, *comb. nov.*

- *Gomphrena aphylla* POHL ex MOQ., in DC., Prodr. 13 (2) : 416 (1849).
- *Xeraea aphylla* (POHL ex MOQ.) O. KUNTZE, Rev. Gen. Pl. 2 : 545 (1891).
- *Gomphrena equisetiformis* R. E. FRIES, Ark. Bot. 16 (13) : 16 (1920).
- *Pfaffia equisetiformis* (R. E. FRIES) SCHINZ, in ENGLER & PRANTL, Pflanzenfam. 16c : 81 (1934).

I agree with SIQUEIRA (1985) that *G. equisetiformis* can not be kept separate from *G. aphylla*. In particular the character emphasized by FRIES, that the tepals are free almost to the base, is of no value, as this depends on the age of the flower, the perianth splitting when approaching maturity.



ALPHABETICAL LIST OF SYNONYMS

- Achyranthes maritima* (Mart.) Standl. = 1c  
*Alternanthera boliviana* (Moq.) Usteri = 2a  
*A. maritima* (Mart.) St.-Hil. = 1c  
*A. maritima* var. *africana* Haum. = 1a  
*A. maritima* var. *communis* St.-Hil. = 1c  
*A. maritima* var. *concatenata* St.-Hil. = 1c  
*A. maritima* var. *parvifolia* St.-Hil. = 1c  
*A. maritima* var. *sparmannii* (Moq.) Mears = 1d  
*Bucholzia maritima* Mart. = 1c  
*Gomphrena acaulis* Rémy = 4e  
*G. acrotepala* Suesseng. = 2a  
*G. angustiflora* Mart. = 15  
*G. anti-lethargica* Alv. Silv. = 8  
*G. aphylla* Pohl ex Moq. = 16  
*G. boliviana* var. *lanceolata* (R. E. Fries) Pedersen = 2c  
*G. cinerea* Moq. = 12  
*G. conwayi* Rusby = 4c  
*G. equisetiformis* R. E. Fries = 16  
*G. eriophylla* Mart. = 11  
*G. globosa* var.  $\gamma$  *albiflora* Moq. = 2a  
*G. lanceolata* R. E. Fries = 2c  
*G. martiusiana* Steud. = 15  
*G. meyeniana* var. *acaulis* (Rémy) Suesseng. = 4e  
*G. meyeniana* var. *albiflora* Stuchl. = 4e  
*G. meyeniana* var. *aureiflora* Stuchl. = 4a  
*G. pygmaea* Suesseng. = 7  
*G. sericantha* Mart. = 12  
*Illecebrum maritimum* (Mart.) Spreng. = 1c  
*Iresine celosia* L. var. *nicotianoides* Suesseng. = 10  
*I. celosioides* L. var. *macrophylla* Griseb. = 10  
*I. heliotropifolius* fa. *robusta* Hicken = 2c  
*Pfaffia cinerea* (Moq.) O. Kuntze = 12  
*P. equisetiformis* (R. E. Fries) Schinz = 16  
*Telanthera maritima* (Mart.) Moq. = 1c  
*T. maritima* var.  $\alpha$  *communis* (St.-Hil.) Moq. = 1c  
*T. maritima* var.  $\gamma$  *concatenata* (St.-Hil.) Moq. = 1c  
*T. maritima* var.  $\beta$  *parvifolia* (St.-Hil.) Moq. = 1c  
*T. maritima* var.  $\delta$  *sparmannii* Moq. = 1d  
*Xeraea angustiflora* (Mart.) O. Kuntze = 15  
*X. aphylla* (Pohl ex Moq.) O. Kuntze = 16  
*X. boliviana* (Moq.) O. Kuntze = 2a  
*X. eriophylla* (Mart.) O. Kuntze = 11  
*X. sericantha* (Mart.) O. Kuntze = 12  
*Xerosiphon gracilis* Turcz. = 15



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